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Atari ST
Amiga
CBM 64 / 128
Spectrum
Amstrad
+ more

ACE

ADVANCED·COMPUTER·ENTERTAINMENT

GAMES

DIPLOMACY
Micro megalomania

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SWE
GOB
NTS
SKA
DEN
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BAL
PRU
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RUH
SIL
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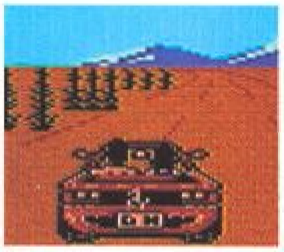
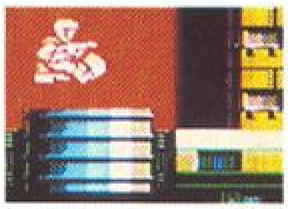
BOH
GA

OUT RUN
Low, high or neutral?



DAN DARE
Mekon mischief



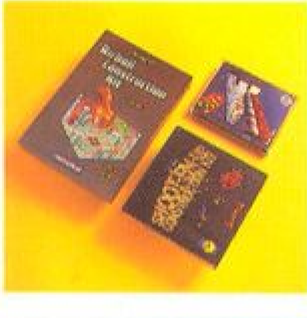
VIOLENCE TORTURE MUTILATION

An ACE investigation reveals that the game you're playing could be breaking the law

GRAPHICS

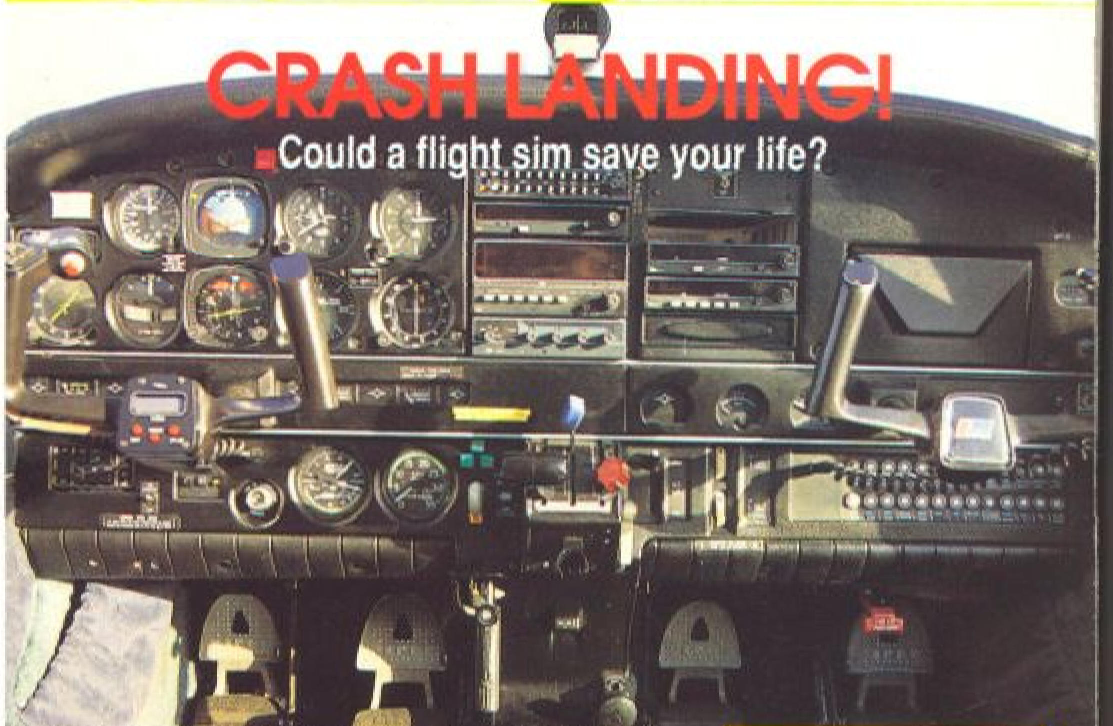
Great new DIY series begins

GAMES CREATORS
Programming power to the people

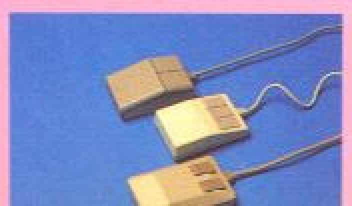


CRASH LANDING!

Could a flight sim save your life?



24 PAGE BUYERS' GUIDE
Buying a computer? Upgrading your system? The ACE **Pink Pages** list everything you need to know.

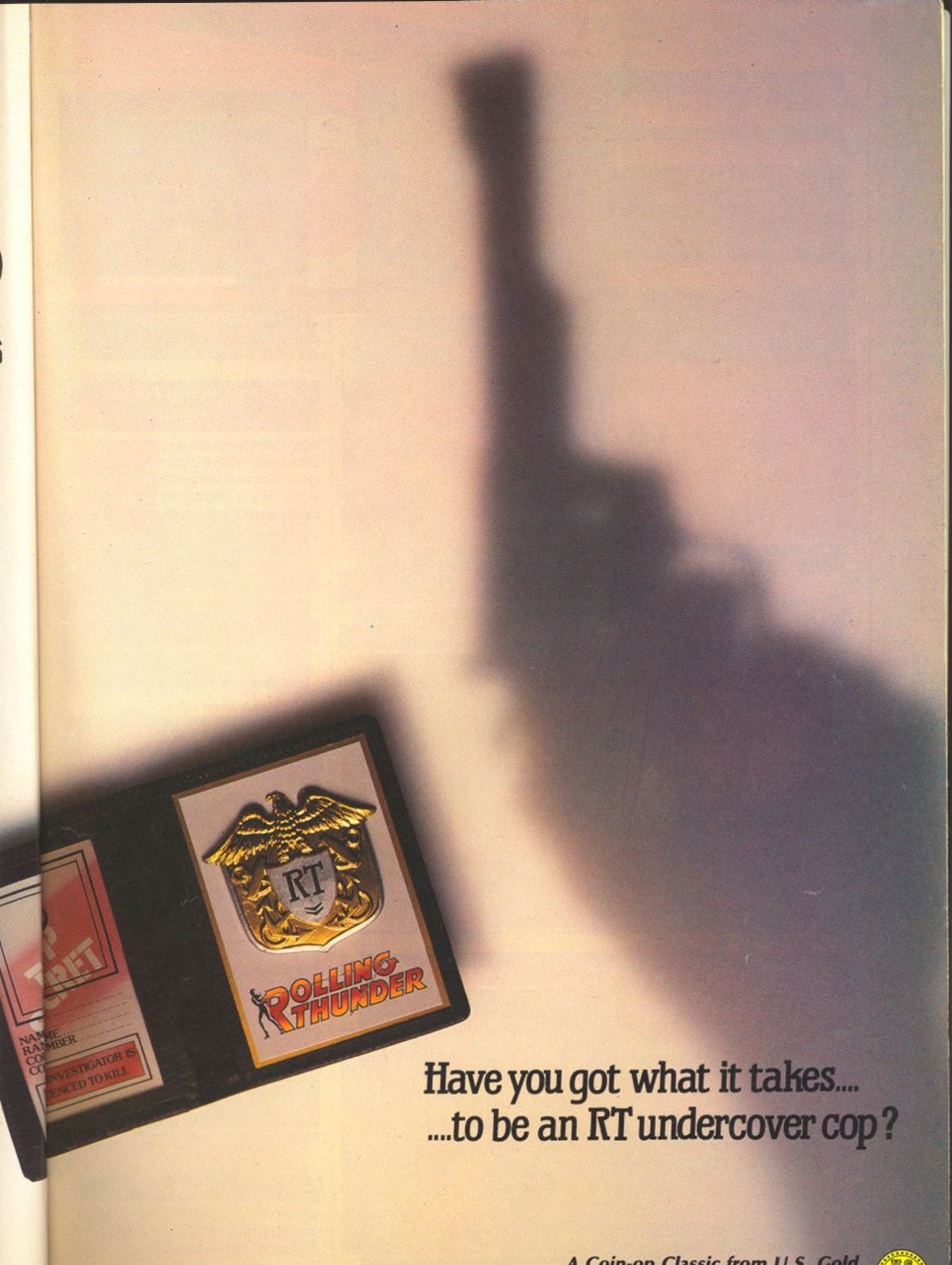


DIGITAL DRUMS
Red hot rhythms

ROLLING THUNDER

namco

NAME
RAMBER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ACE 5

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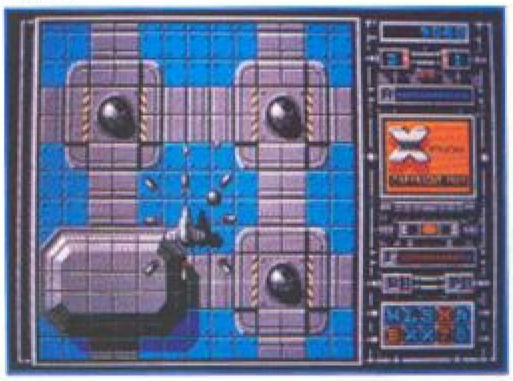
16-bit games machine from Amstrad?...8-bit's **last gasp**...looking **back on '87** and **forward to '88**...plus Eastern gimmickry in our **View from Japan**.

14 Previews

Tomorrow's games **today** – we sneak a glimpse at ***Xenon*** from Melbourne House, **mediaeval mischief** in ***Black Lamp*** from Firebird, and many more.



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We would like to stress that the **extreme views** expressed on these pages are absolutely **not** those of the editors.

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Tell us **all about yourself** – if you **dare** – and you could walk away with some free software for your micro.

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Some **subtle hints** as to what you can expect from us in 1988.

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27 The Axeman Cometh

Will 1988 see the **sharp edge of censorship** brought to bear on computer software? Even **more worrying** – our investigation shows some titles may already be **breaking the law**.

77 Here's One I Made Earlier...

Andy Wilton checks out **games creators** – could you turn out a **number-one arcade smasher** without writing a single line of program code?

69 Crash Landing

We put some seasoned pilots to the test with **six flight simulator programs** – and get the verdict of some real live pilots....

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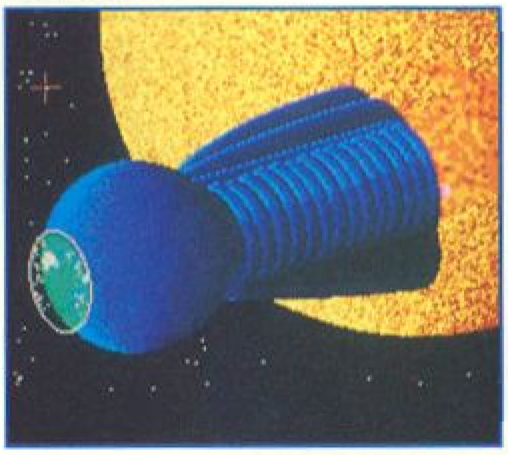
Brian Larkman starts his series of 'How-to-do-it' articles for everyone who wants to **brush up** on their paintwork.



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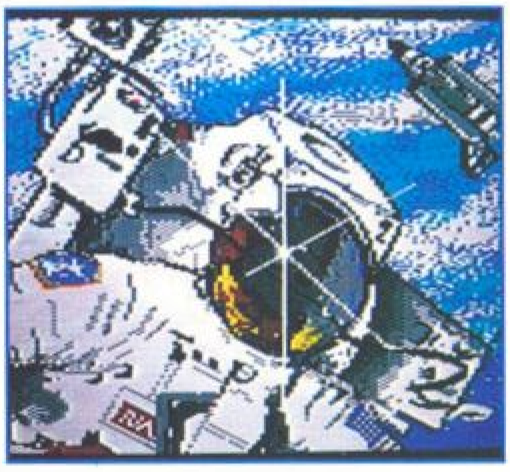
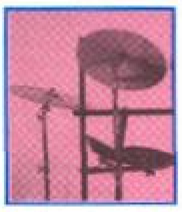
At last, you the readers show your **true colours** in a dazzling display of **pixel mastery.**



...AND SOUND

89 More Bangs For Less Bucks

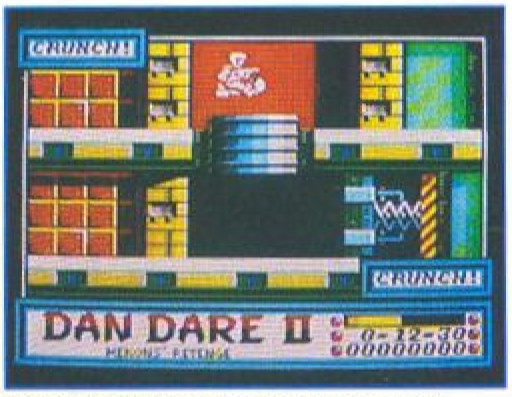


Digital drum kits can do wonders for your **rhythm**, but can you **afford** one and what exactly do you get for your **money**? Keith Ansell investigates....

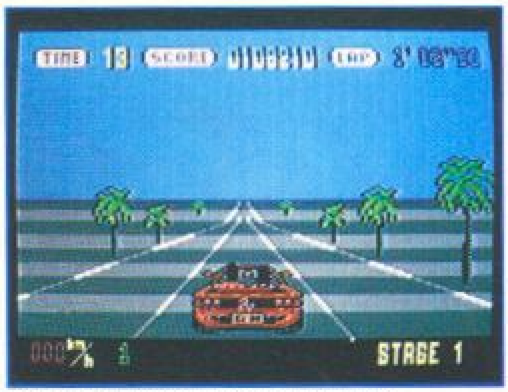
GAMEPLAY

37 Screen Test

The **first line-up for 1988** – and our **biggest** yet. Take your pick from **thirty** New Year offerings – including ***Outrun, Super Hang On*** and the chance to **rule Europe** in *Diplomacy.*



Page 41: *Dan Dare II* – Mekon mayhem, but where's Digby?



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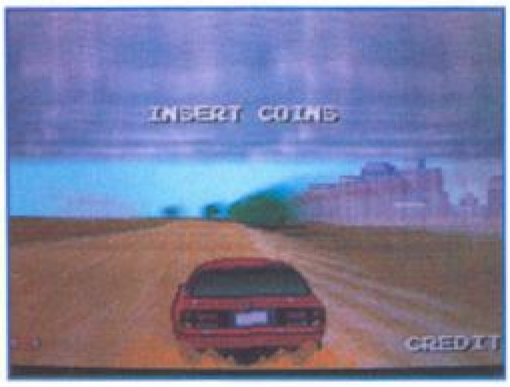
22 Arcade Ace

Staggering piston power in *Top Speed*, and a spot of **primitive conflict** in *Time Soldier*. Andy Smith comes out with his hands shaking...



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93 Tricks 'n' Tactics

Take your score to the **top of the tower** in ***Nebulus***, break the ice in ***Bobsleigh***, and hone your game-playing skills to **sparkling perfection** as we crack some of last month's **900+ releases.**

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81 Adventures

Magnetic Scrolls' ***Jinxter*** – can it **steal a march** on *Guild of Thieves*? Plus a look at the superb character handling in Infocom's *Suspect* and the first of the **Adventure Helplines.**

BUY LINES

85 Special Offers

Celebrate the New Year with **£4 discount** on each of the carefully selected titles listed here.

87 Subscription Offer

This magazine could have **slipped through your letter-box**, saving you time, aggravation, and the risk of missing the latest issue. **What's more**, subscribers get **£10 extra discount** off those mail-order bargains.

99 ACE PINK PAGES

No **pinker** than last month, but still **red-hot**...and now we've **included peripherals** as well. We think these pages give both the experienced and the first-time buyer **all the information they need**...and we're not **blushing** to admit it, either.

ACE COMMENT

Stop this horror now

ACE says enough is enough. Our children have been subjected for too long to the computer game nasties, corrupting their innocent minds and giving them the kind of bad dreams that would make Rambo wake up in a cold sweat. Something must be done. Quickly. Fast. Soon.

'We say the evil men behind this evil tide of muck should be stopped in their evil tracks before their evil games cause any more damage.

Mrs. Thatcher should immediately re-introduce the death penalty for the computer nasty producers. But we say that hanging is too good for them. Can we not find a more painful punishment to fit this horrible crime?

Come off it, spoilsports!

Just who do these killjoys trying to stop us play our favourite games think they are? The know-alls and do-gooders think they can tell us what we can and can't play. Well we say, get knotted!

Anyone in their right minds can see that computer games are just good, clean fun. OK, so you have to go round killing everything in sight. But that's life, isn't it?How could it possibly do any harm to our marvellous British kids?

No, all these so-called people want to do is stop honest folk enjoying a bit of harmless fun. But they're out of their tiny little minds if they think they can stop us enjoying ourselves. There's too little laughter in the world as it is. So don't let the wet blankets ban our games!

For a more rational and better-informed view of the whole business of violence, sex and censorship in games, see the article on page 27 of this issue.

ADVANCED COMPUTER ENTERTAINMENT

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Q

Scruples, an inventive and original computer game, is in the shops today. Do you rush out and sell a personal possession so you can buy it before pay-day?

Q

Scruples computer game is available on Spectrum 48/128, +2, +3, Commodore 64/128, Amstrad CPC 464, 6128 and Atari ST. The computer you own is not one of these. Do you replace it immediately with one that runs Scruples?

Q

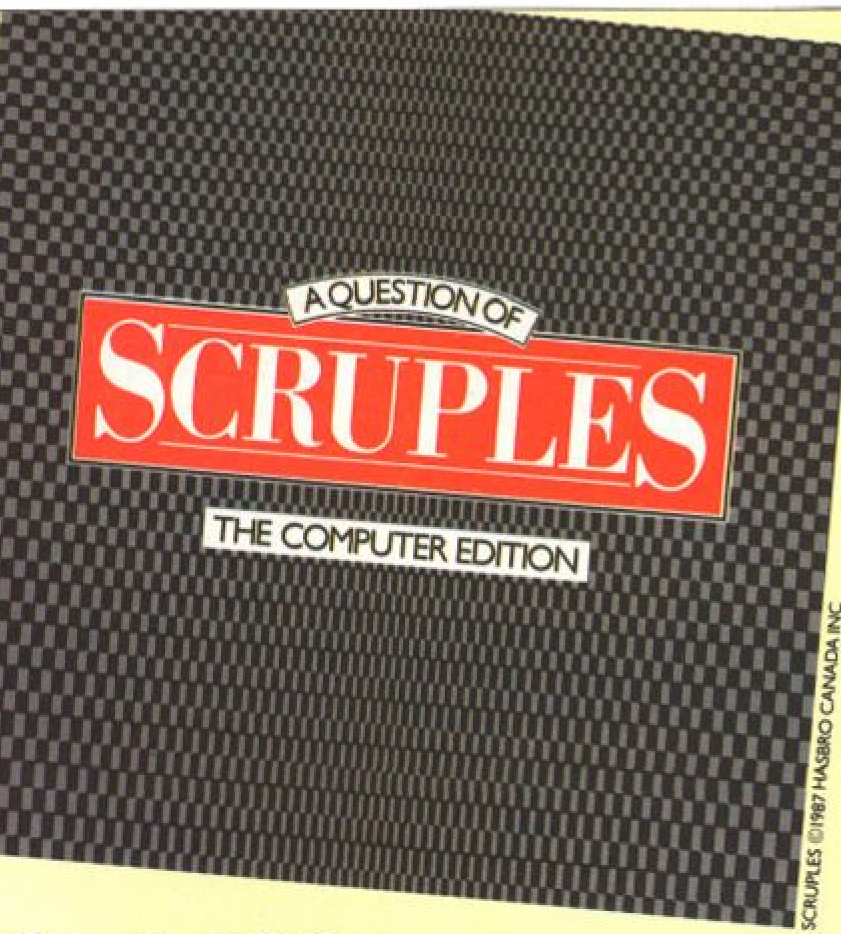
Scruples makes such an excellent Christmas present, you buy one for your computer-mad niece. After one play you are completely hooked – do you keep it?

Q

You are due to keep an important appointment that may affect your future career. Your spouse loads up Scruples and you get involved in a game. Do you keep the appointment?

Q

An attractive colleague at work is becoming very attentive and asks you to dinner. You find out that not only do they dislike Scruples but they hate computers too. Do you accept their invitation?



YES? NO? ...DEPENDS.

Milton Bradley's compelling game is now available for computer. Anticipate your friend's responses to the provocative questions, in Scruples. Think carefully before answering the moral dilemma you are posed, or turn the tables and give an opposite reply to the one expected! Bluff and counter bluff will be needed, and beware, the other players (the Jury) can challenge your honesty at any time.

The computer interpretation is ingenious and funny. Up to ten people can play: all human, all computer, or any combination. There is a minimum of 64 characters to choose from, each with simulated 'intelligence'. Real players must 'adjust' their personalities and select their appearance from a gallery of faces provided. A minimum of 230 leading questions are built-in and no game will ever be the same.

Scruples, The Computer Edition, is available from all good software retailers or directly from Leisure Genius.

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COMMODORE SCREEN

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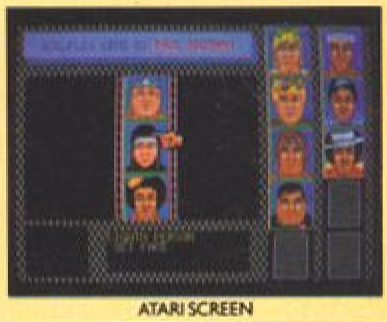
BILL: PICK A CARD TO GIVE TO SALLY

SPECTRUM SCREEN

AMSTRAD SCREEN



ATARI SCREEN

ACE NEWS

BT GET GRAFTGOLD GAMES – FOR KEEPS?

After months of wrangling, Telecomsoft have announced that they will be bringing out the disputed games *Morpheus* and *Magnetron*. The titles fell into their hands at the PCW show when Graftgold programmers Steve Turner and Andrew Braybrook, long time associates of Hewson, signed long term programming contracts.

Hewson had already geared up to publish the games themselves so rights over the titles were disputed fiercely, but the matter has now been settled temporarily by a High Court injunction. BT successfully restrained Hewson from publishing the titles until the case can be tried, and so can now safely go ahead with publication themselves. The games will appear shortly on Telecomsoft labels: Firebird will get *Magnetron* while *Morpheus* goes to sister label Rainbird.

Handshakes all round: Steve Turner and Andrew Braybrook of Graftgold at the PCW Show signing ceremony with Telecomsoft's Paula Byrne and Paul Hibbard

But that is unlikely to be the end of the matter. The granting of an injunction under such circumstances has nothing to do with the merits of the case, so it's by no means certain that Telecomsoft will come out on top. The final court case won't take place for several months but Hewson are determined to continue their action over the titles. Should Hewson win, Telecomsoft would have to make good whatever financial loss their injunction caused. The damages would, as the saying goes, be substantial.

AMSTRAD TO GO AMIGA IN '88?

Rumours of a cut-price 68000-based Amstrad home micro are flying thick and fast. In the computer weeklies over the last month 'inside sources' have the Brentwood company either producing a CPC replacement in a retooled 6128 case, or an Amiga-compatible version of the PC1512.

Amstrad are not renowned as a leaky company – in the past they've launched machines in the UK without announcing them at all – so 'horse's mouth' tales like these would be greeted with scepticism even if they agreed with each other and sounded plausible. As it is however, they both have major problems: a story on the CPC replacement claims that Amstrad have had 'minor technical problems putting in the 16 bits' - whatever that's supposed to mean – while the Amiga-compatible story also seems extremely doubtful as things stand.

But is there an Amstrad 68000-based machine in the offing? Support for the CPC is now in decline, and with the Spectrum +3 widely seen as the last in Amstrad's other entertainment computer line a new low-price micro would fill an important gap in the firm's range. The 1512 and 1640 PCs can't compete with the ST or Amiga as far as music, art and games are concerned so it looks like it'd take a new micro to keep Amstrad in the leisure market. Amstrad's official comment was that 'we don't comment on future products prior to launch' - but given the company's tight-lipped reputation, that may not be the final word on the matter.

Alan Sugar: is he making eyes at the Amiga?

Amiga 500: Amstrad clone due to give it a bashing?

CLONE ARRANGER?

Clones – copy-cat micros that can run the same software as existing machines – are well-established in the business field, but home micro mimicry is (black market aside) almost unknown.

To clone a micro like the Amiga you need to get both the hardware and the operating system compatible. The Amiga's MC68000 CPU is available off the shelf and cheaply too, but its all-important custom chips Agnus, Paula and Denise are only available through Commodore.

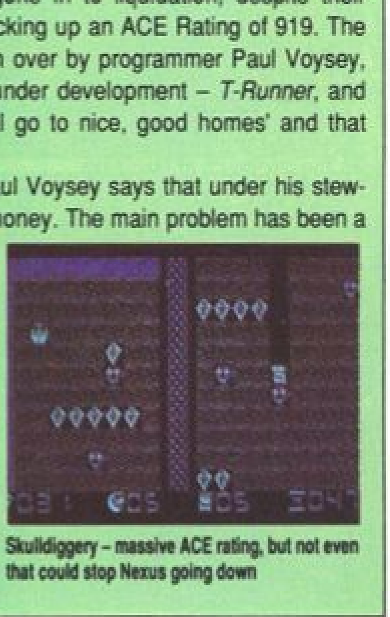
While Commodore are certainly prepared to sell the custom chips for other manufacturers' products – the Arcadia coin-op machines, for example – it doesn't seem very likely they'd sell them for inclusion in an Amiga-bashing Amstrad machine. Amstrad's only hardware alternative would be to produce their own custom chips, designed so as to mimic Commodore's. Doing this without infringing Commodore's rights would be extremely difficult and prohibitively expensive.

From the operating system angle an Amiga clone looks just as unlikely. Although the Amiga's OS is derived from Tripos, a product still owned by Bristol firm Metacomco, the aspects of the system concerning the custom chips and the Amiga's user interface Intuition are exclusive to Commodore. 'We have sold Tripos on to other firms for 68000 systems, but those weren't home micros let alone Amiga lookalikes', said Metacomco's Andrew Spencer. 'We aren't working on an Amiga clone for anybody. You couldn't produce a clone – not a totally Amiga-compatible one – without going to Commodore.'

Nexus hit nadir

Yet another small, independent software house has bitten the dust. This time it's Nexus who've gone in to liquidation, despite their recent release *Skulldiggery* clocking up an ACE Rating of 919. The running of Nexus was recently taken over by programmer Paul Voysey, who assured us that the programs under development – *T-Runner*, and Bo Jangeborg's *Resolution* – 'will all go to nice, good homes' and that they should be finished in January.

So why did Nexus go down? Paul Voysey says that under his stewardship Nexus 'didn't spend a lot of money. The main problem has been a lack of investment in publishing product.' With the result that the company's debts outstripped income to the extent that liquidation was inevitable. Paul Voysey hopes to be back in the software business very soon – but he won't be running a software house, he says: 'When I re-enter it will be very much on the programming side.'


Skulldiggery – massive ACE rating, but not even that could stop Nexus going down

1987 – the year i

Christina Erskine, erstwhile editor of Popular Computer Weekly, plays Janus – one face looking back at 1987, the other forward to 1988

Those of you who spent the year huddled over a monitor, defeating ever-increasing waves of aliens, all expert in martial arts kicks and capable of simulating Daley Thompson, may not have noticed anything too special about 1987. It was a bit lacking in the spectacular events department; **Alan Sugar** didn't even attempt to buy out **Jack Tramiel**, and while Commodore got rid of a good many of its senior staff, it never fllirted with bankruptcy as it had done so tantilisingly in the past.

Behind the scenes, however, there was plenty going on, which should mark a permanent change in the whole nature of the home computer industry: new and more advanced micros, and software for them; a lot of talk about new data storage and retrieval media; the big guns getting an even bigger slice of the software cake than before.

Alan Sugar – didn't buy Atari, didn't launch a 16-bit machine

Sir Clive Sinclair made a welcome return to the limelight with the launch in **February** of the **Z88**, the portable micro which had begun life as *Pandora in the* Dark Ages of Sinclair Research. Sir Clive delivered the machine late – he would, wouldn't he? – *and it was not* really a micro for the Sinclair games-playing faithful, but most purchasers pronounced themselves well-satisfied with it.

In **March**, Commodore finally inveiled what so many people had been clamouring for: an **affordable Amiga**. And once home users had two 68000-based machines to choose from, with the Amiga 500 and the Atari ST FM both in the shops, the software companies took a deep breath and sunk development money into 16-bit games.

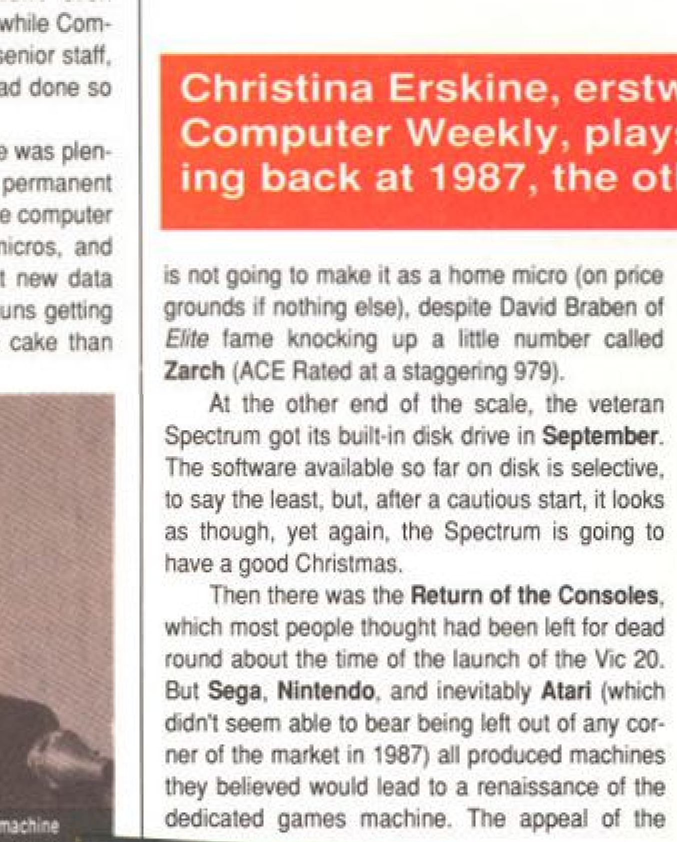
Sadly, we haven't really seen the fruits of that development yet. But with STs disappearing from the dealers' shelves, and sales of the A500 picking up fast, the software houses had to act, even if so far, it has largely meant conversions of Spectrum and Commodore titles, and rough 68000 code that can be put on either machine with the minimum of twiddling.

However, the prominence of ST/Amiga software on display at the **PCW Show** in September augurs well for the the future. And in terms of what the machines are capable of, we ain't seen nothing yet...

In **June**, the software fraternity had another advanced machine to consider, when Acorn launched Archimedes, a range of micros utilising Acorn's own Reduced Instruction Set Computer chip, and some truly advanced technologhy. Frighteningly fast, with awesome sound and graphics potential...but who on earth was going to buy the beast? It's generally agreed that Archie is not going to make it as a home micro (on price grounds if nothing else), despite David Braben of *Elite* fame knocking up a little number called **Zarch** (ACE Rated at a staggering 979).

At the other end of the scale, the veteran Spectrum got its built-in disk drive in **September**. The software available so far on disk is selective, to say the least, but, after a cautious start, it looks as though, yet again, the Spectrum is going to have a good Christmas.

Then there was the **Return of the Consoles**, which most people thought had been left for dead round about the time of the launch of the Vic 20. But **Sega**, **Nintendo**, and inevitably **Atari** (which didn't seem able to bear being left out of any corner of the market in 1987) all produced machines they believed would lead to a renaissance of the dedicated games machine. The appeal of the consoles to shoot 'em up fans must be huge, and the price makes them almost impulse buys. But with all-singing, all-dancing machines like the Amiga and ST around, the consoles look more likely to find a niche market as second or third machines, or for younger members of the family.



The Z88 – not a game's macine, bu at least Uncle Clive is back in businessz

Software

For the software houses, the year was one of diversification coupled with a concentration of the power bases into fewer hands. US Gold set up **Go!**: a general purpose computer game, console, and toy distributor which clinched a **£2M** deal with arcade publisher Capcom; **Gremlin** signed up Gary Lineker and expanded into board games; **Ocean** announced the release of a board game where your video recorder (yes, video recorder) takes the place of throwing the dice (see separate item); **Virgin** took Ranulph Fiennes' Transglobe expedition as the subject of an interactive video project; **Mastertronic** put Amiga boards into arcade machines, wrote games for them, and released a compilation LP; **Mirrorsoft** got busy with CD-Rom technology.

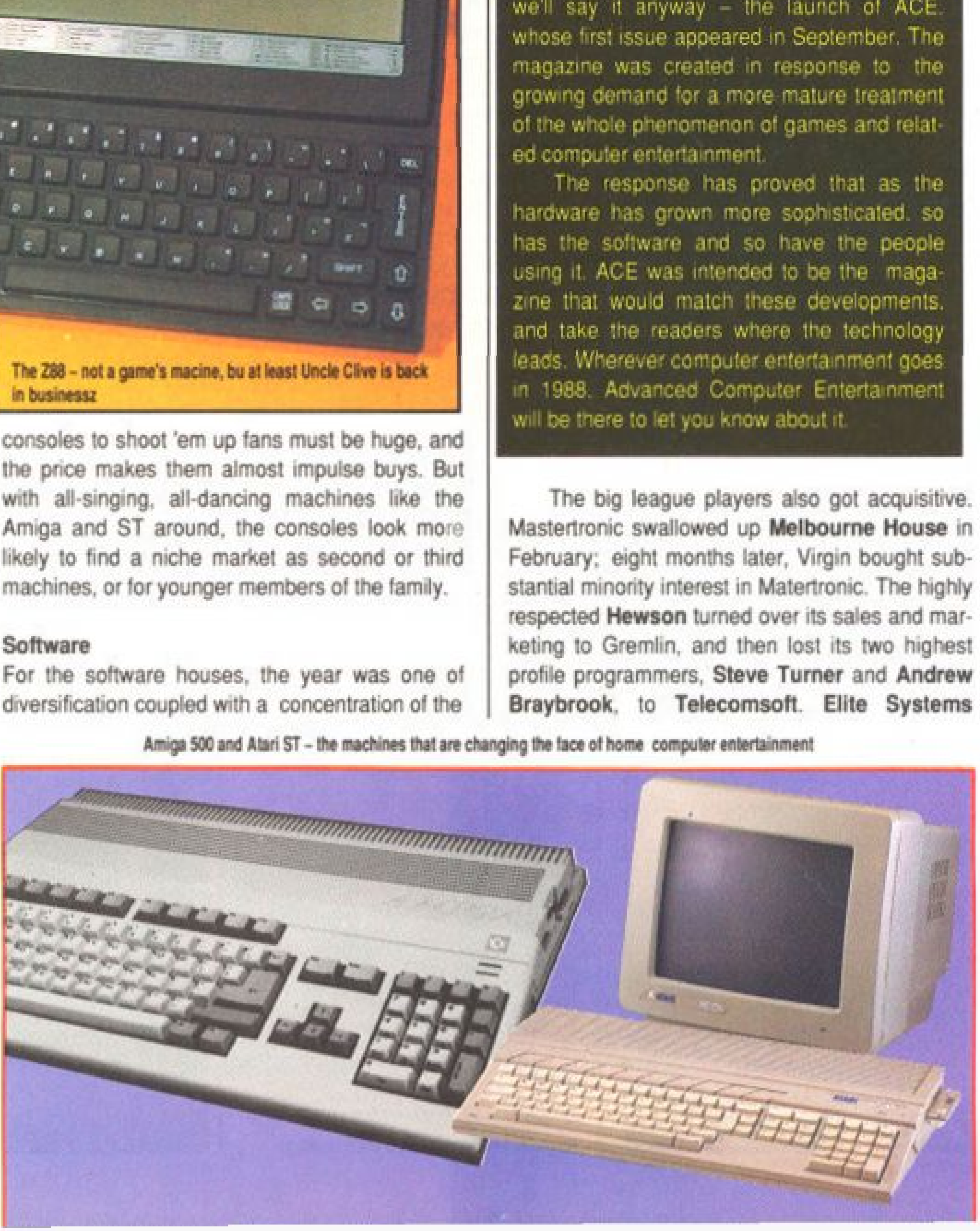
Advanced Computer Entertainment

One of the major events of 1987 was – of course, naturally, it goes without saying but we'll say it anyway – the launch of ACE, whose first issue appeared in September. The magazine was created in response to the growing demand for a more mature treatment of the whole phenomenon of games and related computer entertainment.

The response has proved that as the hardware has grown more sophisticated, so has the software and so have the people using it. ACE was intended to be the magazine that would match these developments, and take the readers where the technology leads. Wherever computer entertainment goes in 1988, Advanced Computer Entertainment will be there to let you know about it.

The big league players also got acquisitive. Mastertronic swallowed up **Melbourne House** in February; eight months later, Virgin bought substantial minority interest in Matertronic. The highly respected **Hewson** turned over its sales and marketing to Gremlin, and then lost its two highest profile programmers, **Steve Turner** and **Andrew Braybrook**, to **Telecomsoft**. **Elite Systems**

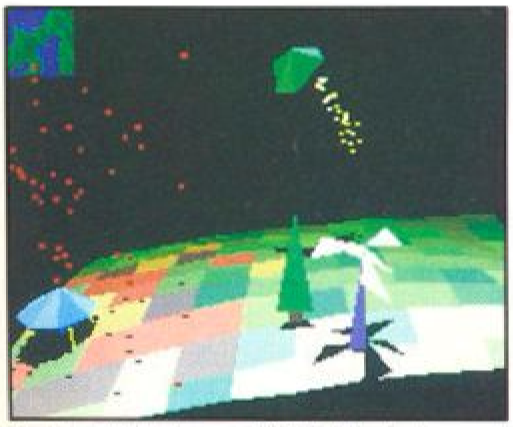
Amiga 500 and Atari ST – the machines that are changing the face of home computer entertainment



r in focus

bought **Durell**, who withdrew from the business of games sotware. **CRL** and **Martech** tied themselves up with US giant **Electronic Arts**, which moved into Slough in March, and launched an extremely respectable range of games at the PCW show.

When any software companies found time to release computer games, it was Budget Software that dominated the charts. A new label, **Alternative**, made the best attempt to break the **Mastertronic/Firebird/Code Masters** stranglehold – and didn't the last-named make such a tremendous fuss about reaching Division One?



Zarch – best Archimedes game of 1987. Only Archimedes game of 1987. Will Archie get more attention in '88?

With all this extraneous activity, it's perhaps not surprising that there was little in the way of mould-breaking software. More Karate, more licensed toys, more sport, more aliens and a clutch of *Breakout* clones were the order of the day. To balance this out, we did get the graphics in *Defender of the Crown* (shame about the game), continued high standards from Hewson, particularly with *Exolon* and *Nebulus*, the controversy of *Barbarian*, and the playability of *Bubble Bobble*. The boys Ritman and Drummond done great with *Match Day 2*, and there were more courses to try out in *Leaderboard*. Adventurers watched more releases from Infocom come out than any mere mortal can cope with, while Level 9 kept going at a steady rate, and *The Pawn*'s sequel, *Guild of Thieves*, appeared. The quality of compilations rose markedly witht he excellent *Solid Gold* and the everything-but-the-kitchen sink *Game, Set and Match*.

Lastly, *Star Trek* finally appeared and despite its tardiness became the first ST game to make it in to the Top Ten. Bets are now being placed for which of Telecomsoft's titles will be a year late in '88.

Overall, though, 1987 marked a turning point in computer entertainment. The 68000-based machines took off, as did their associated software. The games companies are getting smaller in number and more diverse in their entertainment activities. The games themselves are becoming more and more tied in with related toys, cartoons, films, TV programmes, breakfast cereals, whatever – which makes it all the more gratifying to see wholly original and technically innovative games such as *Nebulus* and Incentive's *Driller*. With TV and national press advertising, not to mention all those Commodore hoardings at Stamford Bridge, home computing is moving away from its cult status into the mainstream of leisure activity.

Crystal Balls

Technological developments which have begun or been hinted at this year *should* start to become real product in 1988. CD-ROM and interactive video, which have been much talked about for years, should finally hit the streets, with Atari's CD-ROM player coming out, and Virgin's *Transglobe* project reaching completion (BBC only for the time being). Let's hope Atari can organise some available software for its unit, although it doesn't do a bad job of playing conventional compact discs.

Next year should see the 16-bit market mature considerably, as the machines begin to overhaul the old 8-bit standards, both in sales and the quality of software. The wares on display at the 1988 PCW Show will be a true test of how well programmers have got to grips with the power of the machines. Current rumours suggest that we should see Amstrad producing a machine in this area as well, which will certainly keep the interest high – and the prices down. But don't count on an Amstrad 16-bit micro; Alan has a reputation for confounding the ball gazers...

Even the 16-bit machines will start to look a bit slow and cumbersome if Acorn makes a go and further developments to the Archimedes, and Atari's transputer makes an impact; like the STs when they were originally announced back in 1985, neither of these will have a presence in the home market, but come 1989, and 1990...

The consoles – cheap and cheerful, but not serious rivals to the 16-bit computers

Look out too, for more acquisitions, as the software companies on the top of the heap take over more and more of the independents. In two or three years time, the giants will own just about everybody, and that's when you'll start to see the one-person outfits start up again – rather like the indi record labels.

And of course the issue of certification, and indirectly, 'censorship' is dealt with elsewhere in this issue of ACE, but the implications are staggering.

In the arcades

Tiger Road

Capcom's latest coin-op release, *Tiger Road*, features stunning graphics and great animation as Lee Wong (that's you) rescues kidnapped children from the wicked Ryu Ken Oh. There are four stages, each with an 'end-of-level-guardian' to defeat.

What really makes the game special, however, is the animation and range of different hazards. Snakes slither up and down decorated pillars ready to strike, huge piles of dismembered skeletons surround giant skulls that literally hoover you up into their mouths, and numerous assassins fly in from all directions. Definitely one to save the 10p bits for in the New Year.

Heart attack

Meanwhile some of the more strenuous arcade games are running into difficulties, it seems. Capcom's *Streetfighter* featured rubber pads which the player literally pounded with his fists as the on-screen character beat the stuffing out of various street-wise foes. Problem is, apparently, that players who got just a little *too* involved ran the risk of injuring themselves on the cabinets.

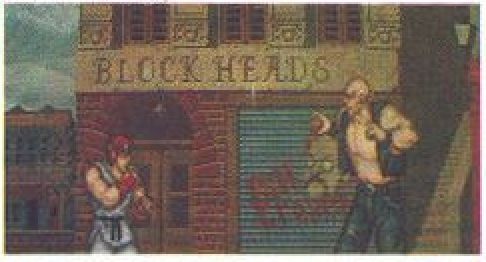
That's nothing compared to the supposed dangers of *Heavy Weight Champ*, whose game control system allows the player to swing punches at the other bloke in the ring by gripping and thrusting specially designed 'punch levers'. Observers have suggested that this could bring about a heart-attack in people with a history of cardiac illness. On the other hand, since people with a history of cardiac illness can drop dead at any moment, this doesn't seem particularly significant.

Sniff-em-ups!

First it was 3D, then came hydraulic cabinets, now Capcom president George Nakayama is talking about a whole range of games with 'smell synthesis'.

No titles have been announced yet, apparently because there is some difficulty in getting a 'nice smell'. This is hardly suprising – most of the opponents you meet in *Streetfighter*, for example, look as if they have serious problems in the personal freshness department. Fighting them's one thing, but smelling them would surely be more than any reasonable man (or woman) could bear.

Streetfighter – not the kind of people you'd want to bump in to (or sniff) down a dark alley



Just to get things moving, however, we suggest the following titles:

Kaptain Kompost – battle your way to the top of the heap.

Sludge Dredd – clean up the streets of Mega-City One.

Aromarama – explore the maze to find the 'smallest room'.

King Pong – catch the bean-guzzling ape before you run out of (fresh) air.

Readers' suggestions on a postcard, please, but no 'scratch'n'sniffs'.

ACE IN JAPAN

Where does it all come from... this high-tech gear which we take so much for granted these days? We all know that TV was invented by a Scotsman, radio by an Italian and computing by Sir Clive Sinclair (give or take a few years) – but nowadays, much of what the Englishman plugs into his domestic power supply comes from the Land of the Rising Sun. Mark Jenkins reports...

You guessed it...Japan is the subject of this roundup of news and tantalising titbits from the world of computing, hi-fi, video and the rest. The newly-formed Yamaha Corporation of Europe was responsible for laying on the trip to the East, and for making it quite clear that Yamaha aren't just about synthesizers and motorbikes – they're also into sports equipment, furniture, jam, pianos, etc. etc,..you name it, they make it.

Yamaha's Shibuya retail store in Tokyo has a huge range of synths and music computers including the CX7 anc CX11, which aren't available in the UK since the MSX standard was a total flop here, despite being popular in Spain, Germany and France...

Slipping into the Tokyo metro (an experience in itself) took us to Akibara, a kind of Tottenham Court Road gone bananas. Block after block of hi-fi, video, computing and electronic gear assaults the senses, although much of it won't work in the UK (due to differing TV standards, for instance) and some of it is illegal (like that neat dual disk drive copying unit for protected software)..

Comms & entertainment

Everything in Japan is interactive – TV shows like *Captain Power* feature flashing which you can "shoot at 'with a "power gun 'available in all the department stores. You can plug in a keypad handset to your telephone and TV for interactive banking and shopping facilities, and carry an electronic phone number index which recalls the number you want and then bleeps it into the phone for you (only possible on all-digital phones, unfortunately)..

Panasonic's neat fax-in-a-phone

You can also buy a Panasonic fax machine with built-in telephone for about £1,000 (half what a bulkier, but otherwise comparable unit costs over here) and send complete printed documents down the phone lines to other fax users.

Computers

MSX is still all the rage in Japan, with MSX2 micros like the Sony Hit Bit very common. You can build this up with a full keyboard or small numeric keypad into a complete business system with Comms and other options.

Lap-top computers are popular – many-companies have models. Sony's 'Produce 100' weighs just a few pounds but has a flip-up 440 character LCD display, a score of Japanese and European fonts, an art package, and a clip-on 32x32 dot printer which can produce business cards, Filofax pages (the Japanese love Filofax),cassette inserts and so on. But it uses non-standard 2" floppy disks and seems unlikely to turn up in the UK.

Fujitsu's FM77 AV40 computer; includes everything but the kitchen sink. But that's coming soon....

One of the most exciting computers available in Tokyo is the Fujitsu FM77, which looks more like a piece of hi-fi than a micro. It comes complete with a TV set/monitor and has a polyphonic music ship with hi-fi outputs, optional MIDI interface and music composition software, a MODEM, SCSI for hard disks and voice sampling circuitry.

TV & Radio

Pocket-sized LCD colour TV's are all the rage in Japan, with models available from Casio, Sharp, Panasonic and many others. One or two models working on the UK's PAL standard are now becoming available here. Casio's TV-4000 at around £108 stands up like a bedside clock and has auto signal lock to home in on any powerful signal; the tiny TV-800 model, with 1.5 'screen, is sold as the BeBi, and credit-card sized AM/FM radios (sometimes with digital tuning and LCD readouts) are common.

Video

Most Japanese video machines are VHD HQ (High Quality) with Hi-Fi sound, or Super Betamax with a claimed 20% improvement in picture quality and three tape speeds. But Video 8 is taking over from both standards with its digital sound and high picture quality; Sony's Video 8 camcorder range includes an underwater model and their Video 8 Pro (£900) has a jog-shuttle dial just like professional U-Matic editing machines, duplicated on the book-sized infra-red remote control unit.

Picture-in-Picture TV's and videos, which superimpose a small section showing another channed onto the main picture, are common as muck in Japan and are just becoming available in the UK, but Sony also have a much more powerful digital frame store with picture-in-picture, pixel magnification and much more for just £500.

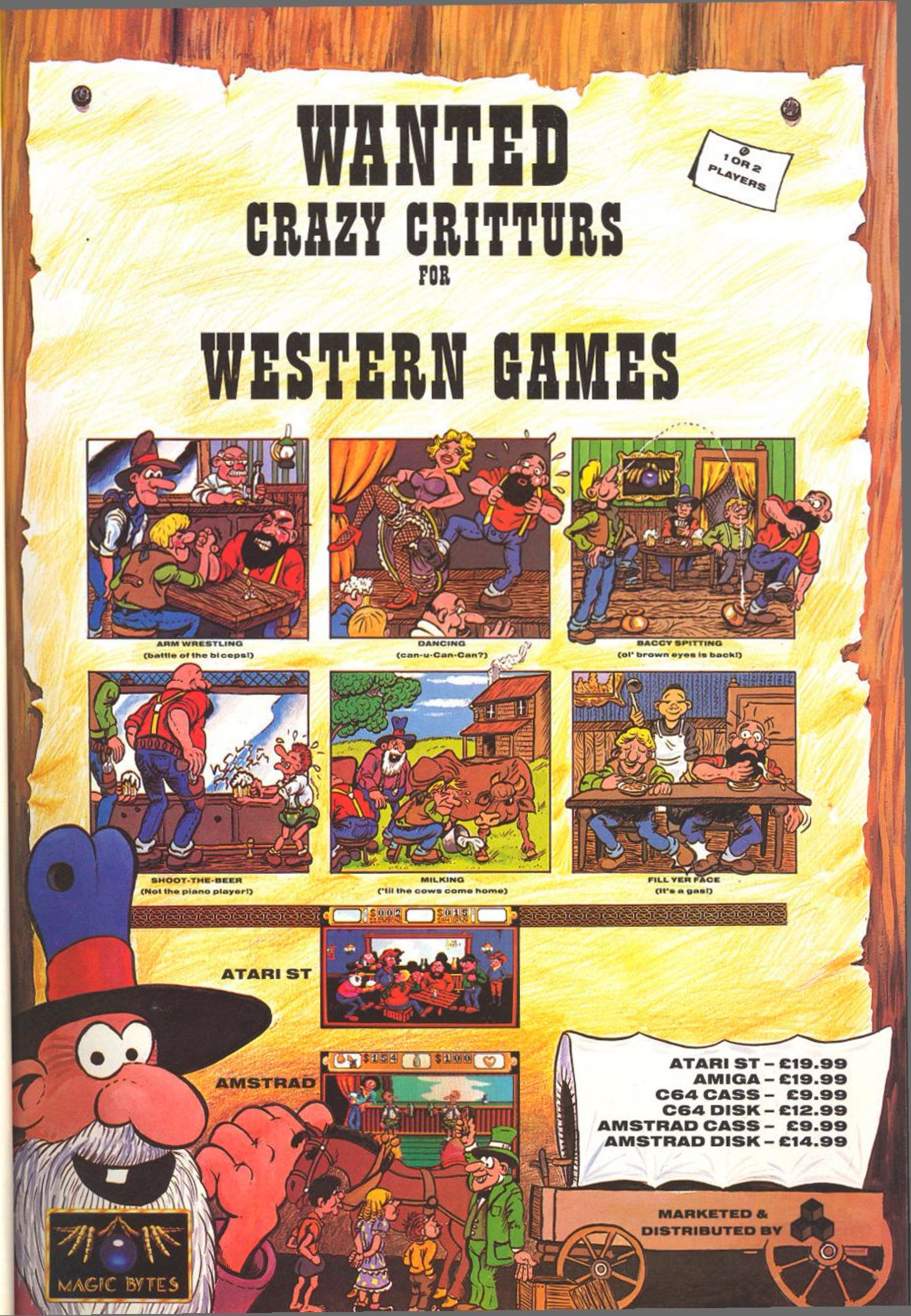
Hi-Fi

Hand-sized LCD colour TV's are available from Casio, Sharp, NEC, Panasonic and many others. Professional recording Walkman designs with Dolby or dbx noise reduction, level meters and so on are popular, while the new CDV standard – not yet launched in the UK but able to play conventional CD's, Laservision disks or 5 'digital-picture-and-sound disks – is just becoming available. Yamaha make a nice CDV player for around £600 (NTSC standard only – tough!) And Digital Audio Tape players are common at around £800.

Casio's cutsey-wutsey BeBi portable LCD colour TV

Gadgets

Sony's Repeat Learning System, an intercom-like gadget costing aroung £90, is actually a playback device for magnetic strip-bearing cards which hold lessons such as "English for Beginners". But if you want a high-tech replacement for the old-fashioned pen and paper, Casiom Victor (JVC) and many other companies make sound samplers the size of credit cards which you can use to leave a message for your loved one on going out. "Your dinner's in the dustbin; I'm in the gas oven" springs to mind. The Japanese, being traditionally short of space, are very fond of anything credit-card sized, and you can pick up pen and pencil sets, makeup sets, solar-powered calculators, world time zone indicators, telephone diallers, English-to-Japanese translators (5,000 word vocabulary) and much more.



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(can-u-Can-Can?)

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SHOOT-THE-BEER
(Not the piano player!)

MILKING
('til the cows come home)

FILL YER FACE
(It's a gas!)

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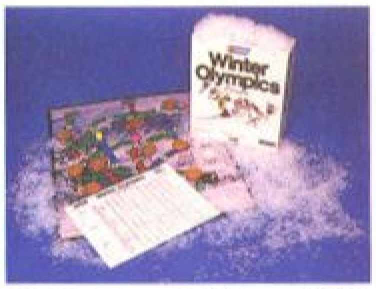
MAGIC BYTES

OCEAN GO INTERACTIVE

Interactive video has become something of a buzzphrase among software houses. Ocean is the latest company to move into this field with the import from the US of the ABC Sport *Winter Olympics* game, a variant on the true interactive video theme.



Winter Olympics: you get all this for your £19.95, except the ice

Ocean chairman David Ward describes the game as a 'Heath-Robinson' way of approaching the interactive video format. The game is primarily a board game, with the video images randomly selected to direct the game's progress.

'It's a precursor to the eventual interaction of computers and TV/video data – where the video will create backgrounds to a game and the computer will control the interaction', Ward said.

In *Winter Olympics*, a random series of numbers and game information which changes every frame (every tenth of a second) is shown on-screen. Players press the pause button to freeze one of these screens as the equivalent of a dice throw while the rest of the game works similarly to a conventional board game.

Ocean gaffer David Ward plays the game with ex-Miss UK Debby Greenwood and ex-Kid, David Jensen

'It's really a halfway house,' Ward admitted. 'You can take the view that the TV is a pre-requisite for family entertainment, but it's a one-way system – you just sit there and look at it. Eventually you'll be able to interact fully with TV images – this is just the beginning.' The *Winter Olympics* video-with-game costs £19.95 and should be on sale shortly.

Ocean are also hoping to move into the video market by buying distribution rights to movies, following on from their joint release with RCA/Columbia of the Vietnam film *Platoon*. David Ward is, however, cautious about the company's prospects in this area.

'Yes, we're looking to build up a video library, and we've set up a division to do that; it's just another way of entertaining people in the home,' he said. He added that although Ocean wanted to continue licensing films for computer games, it would not necessarily buy up video rights for films with a view to micro conversion.

MAD add X

Mastertronic's £2.99 MAD range is to get a facelift and become the MAD X series. Ingredient X is an added B side, so that you'll now get two games for the price of one. Some of the B sides will have been previously released in their own right, bit it is hoped that many will be brand new games.

The first release of this record-industry-inspired range will be on January 6th for Spectrum, C64 and Amstrad machines: the A side will feature *Energy Warrior*, the B side *Molecule Man* – this has been around for some time, and you can (coincidentally) read about its re-design feature in the Games Creator article in this issue.

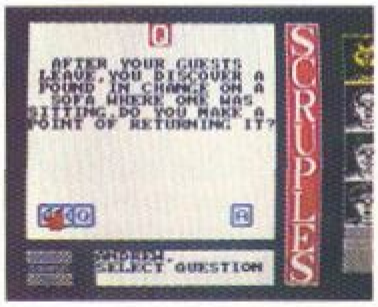
Second release will be *Rockford*, inspired by *Boulderdash*, with *Back To Reality* on the B side (but *Rockman* on the Spectrum). This release marks an interesting move by Mastertronic: *Rockford* is one of the first titles out on their Super Select arcade system, and has now been put straight on to 8-bit budget with no intervening full-price stage. It could promise some very good value games in '88.

Snippets...

Scruples

Virgin

C64 £9.95 cs £14.95 dk



AFTER YOUR GUESTS LEAVE YOU DISCOVER A POUND IN CHANGE ON A SOFA WHERE ONE WAS SITTING. DO YOU MAKE A POINT OF RETURNING IT?

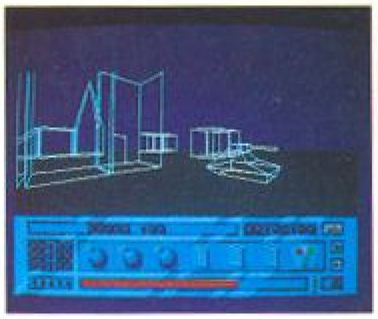
SELECT QUESTION

The computer version of the board game that asked those soul-searching questions which you, of course, answered truthfully. Should be in the shops as you read this.

Catch 23

Martech

Atari ST £19.95dk



The three dimensional vector graphics arcade adventure is about to make its appearance on the 16 bit machines. Steal the plans from the CK 23 test development site before you nuke it. Should be in the shops as you read this.

Winter Olympiad '88

Tynesoft

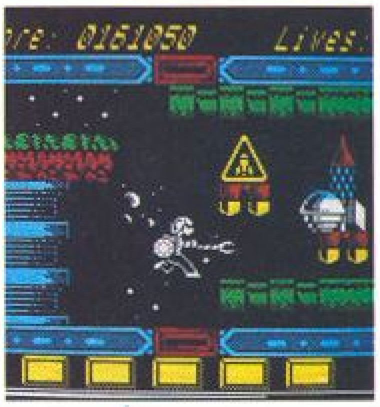
Spectrum	£7.95 cs
C64	£9.95 cs
Amstrad	£7.95 cs
Amiga	£19.95 dk
Atari ST	£19.95 dk
IBM PC	£19.95 dk

Six Olympic sports are combined with the gameplay strategically balanced between speed and control. The 8-bit versions should be out as you read this with the 16-bit versions following 'real soon'.

Northstar

Gremlin

Spectrum	£7.99 cs	
Amstrad	£9.99 cs	£14.99 dk
C64'	£ 9.99 cs	£14.99 dk

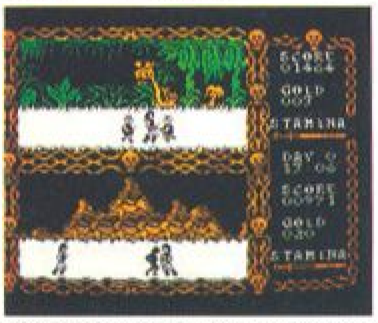


The year is 2499 and arcade action is still the name of the game. Head for the project centre destroying the evil life forms and re-starting the life-support systems on your merry way.

Blood Valley

Gremlin

Spectrum	£7.99cs	
Amstrad	£9.99cs	£14.99 dk
C64	£9.99 cs	£14.99 dk
Atari ST	£19.99 dk	
Amiga	Undecided	

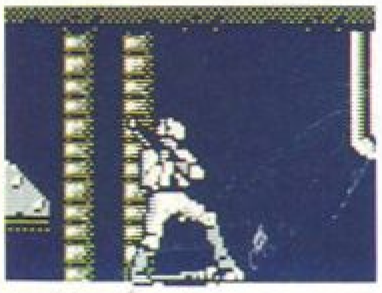


The price may not yet be confirmed, but it looks as if *Blood Valley* will be Gremlin's first Amiga product. The 8-bit versions should be here before that though. The game is based on fantasy role-playing books and the player has a choice of character, each one with a specific objective hidden somewhere within the central plot of a man-hunt.

Space Ace

Infogrames

Atari ST	£19.95 dk
IBM PC	£19.95 dk
C64	£8.95 cs
Spectrum	£7.95 cs



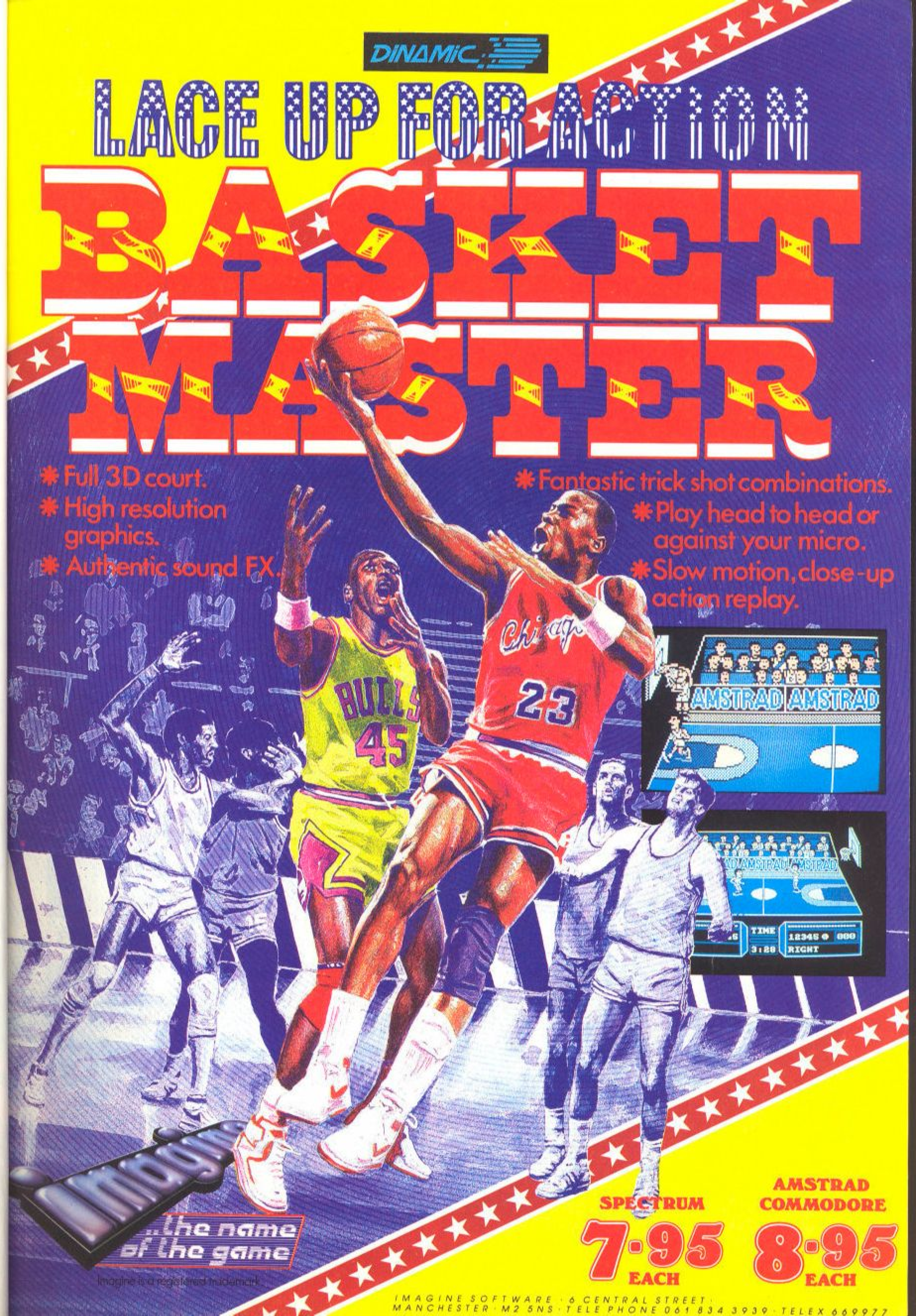
This first of a new series of games introduces a hero by the name of Lee Enfield (sounds familiar). Set in the 22nd century this first game is a shoot-em-up which sees Lee in a heck of a lot of trouble. The second in the series will be set in the Middle Ages, but may not necessarily be another shoot-em-up, so watch this space. 16-bit versions will be arriving first (February) with 8-bit versions shortly after.

Road Warrior

CRL

C64 £9.95 cs £14.95 dk

The team who programmed *Jet-Boys* (reviewed this issue) are set to release another arcade style shoot-em-up. It's a sort of *Out Run* meets*Spy Hunter* as you drive your car through eight countries and try to eliminate the nasties. Look out for it when the March winds are a-blowin'. Also from CRL in February and March will be Amiga versions of *Tau Ceti* and *Academy*.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AMSTRAD AMSTRAD
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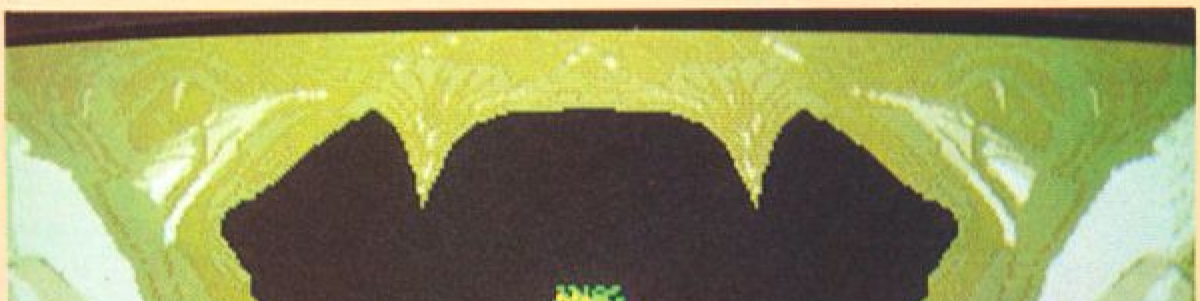
ACTION FOR 88

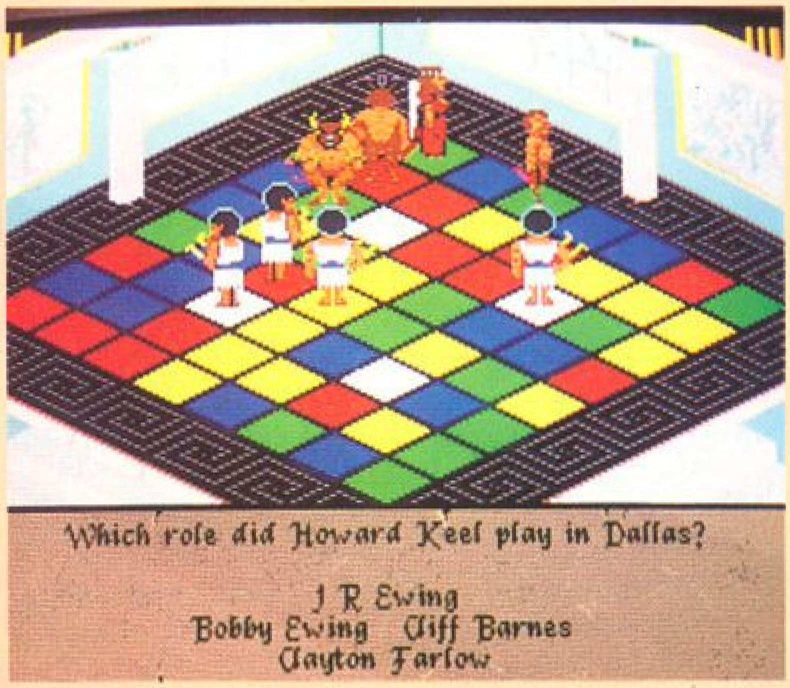
It's heads down and tin helmets on as the first shots in the 1988 software campaign start bursting overhead. Grab a look at the latest command intelligence here – all of these games are due for deployment in the next couple of months. We'll sort the duds from the live rounds next issue...



An isobar is a measure of equal

Temperature
Pressure Rainfall
Height

Amiga: The Gorgon factor - get three questions right and your opponent turns to stone.



Which role did Howard Keel play in Dallas?

J R Ewing
Bobby Ewing Cliff Barnes
Clayton Farlow

Amiga: The main playing board. It's your turn, but you'll have to answer a question correctly before it'll let you move.

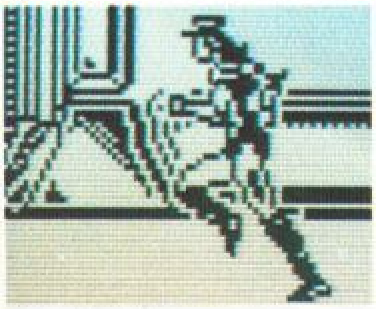
POWER PLAY

Amiga

Out on the BBC yonks ago and no spring chicken on the other 8-bit micros either, this mythologically-inclined board game is finally coming out on the ST and Amiga. Earlier versions won a lot of friends with their clever integration of trivia questions and strategy, but Arcana have spiced things up quite a bit since then as you can see. The graphics aren't the only changes: the strategy element is more complex and important now, with factors like a piece's strength mattering just as much as trivia knowledge. Well, almost!

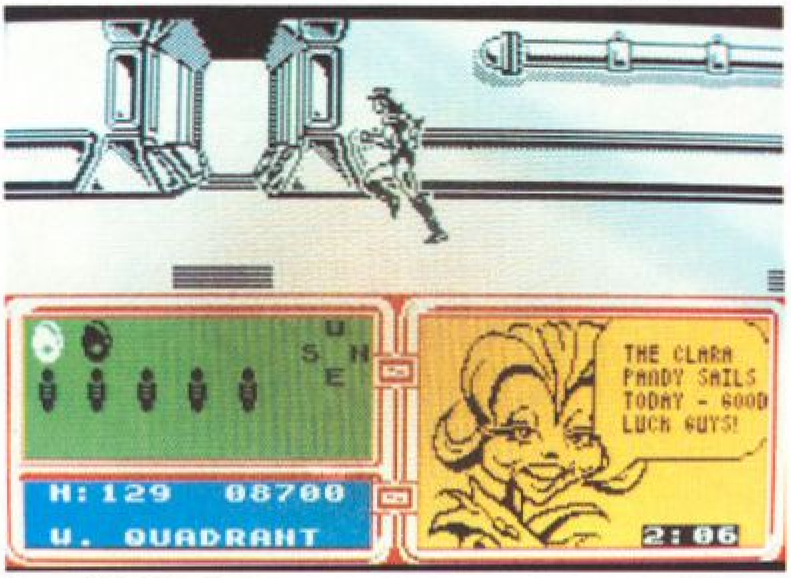
HALO JONES

Piranha



Unemployed life in New York may not sound like great material for a computer game, but we're talking here about the NY of the future where riots are everyday occurrences and Toby the pet pooch is a psychotic robot. Based on the award winning *2000AD* comic strip by Alan Moore and Ian Gibson, the game is all about buying groceries – not a piece of cake in The Hoop, a floating ghetto where shoppers go armed to the teeth

Spectrum, C64 and Amstrad users should get a chance to buy in March, but ST users will have to wait till May for their dose of future shops.

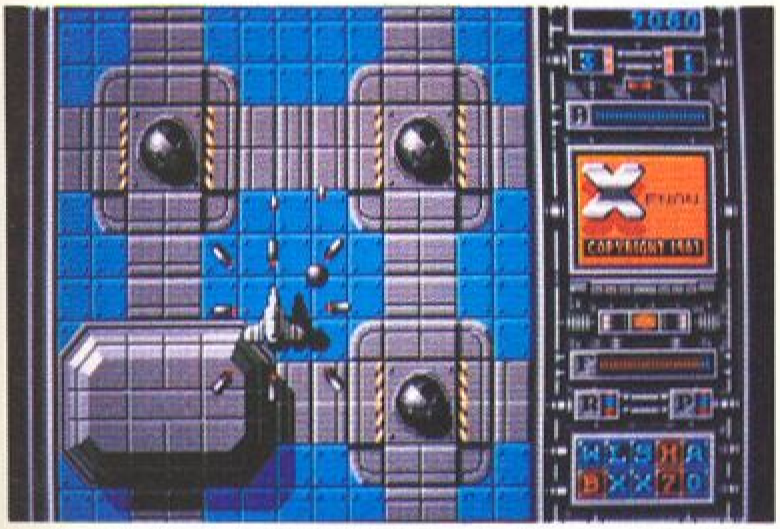


Spectrum: Halo's dashing off to do her shopping, while hologramette Swifty Frisko (bottom right) keeps us up to date with spaceship news.

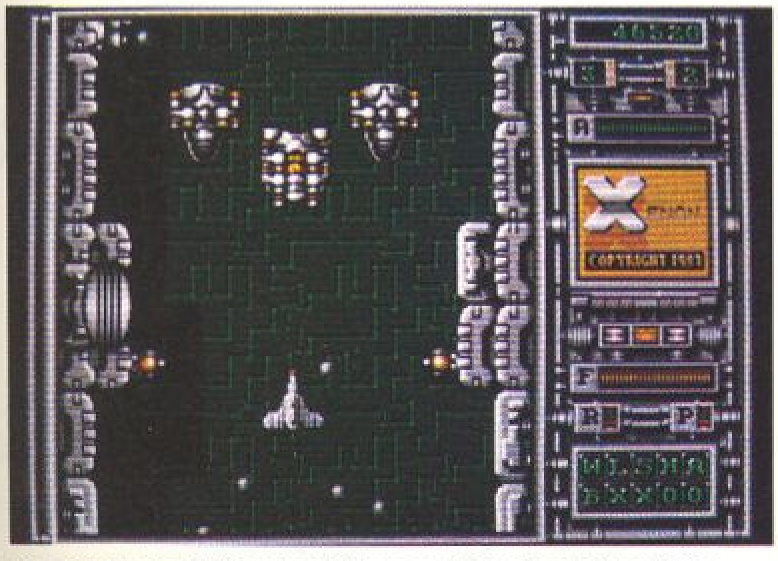
XENON

Melbourne House

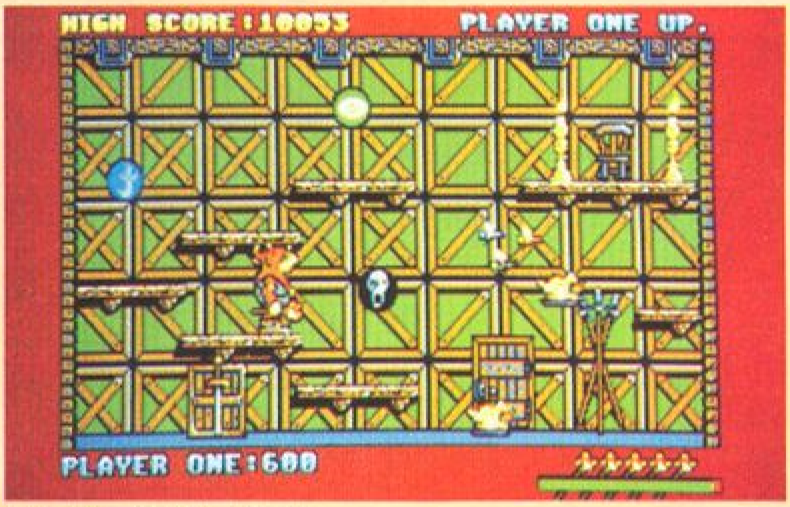
If you win the Super Select System in this month's competition you'll get this one all fired up and ready to play, but even without a lucky streak you'll still be able to save yourself a whole load of 50p pieces if you buy the game instead. It's coin-op standard on the Amiga of course and not far short on the ST, as you can see from these screenshots. You can trundle around blasting ground targets, waggle the joystick to turn into an aircraft and then fly around blasting air targets or the tops of buildings. Compulsive stuff and very good looking – watch out for the ACE review, coming soon!



ST: Airborne on level 1, and you're right in the thick of it. The eight-way firing you've picked up should come in handy against those hostile gun turrets.



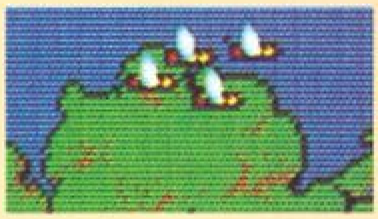
ST: Level 2's a toughie, with *Salamander*-style defences sprouting from the walls. Even getting far enough to see them takes some doing!



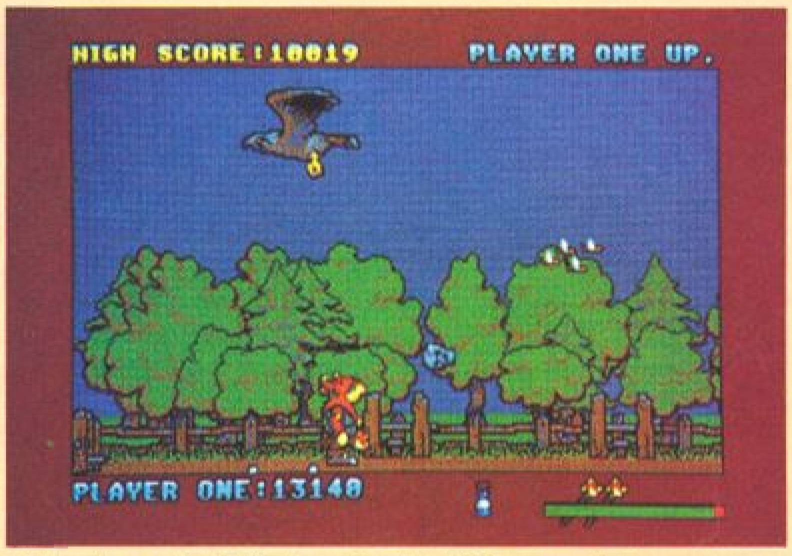
ST: Laugh? I nearly fell off me platform!

BLACK LAMP

Firebird

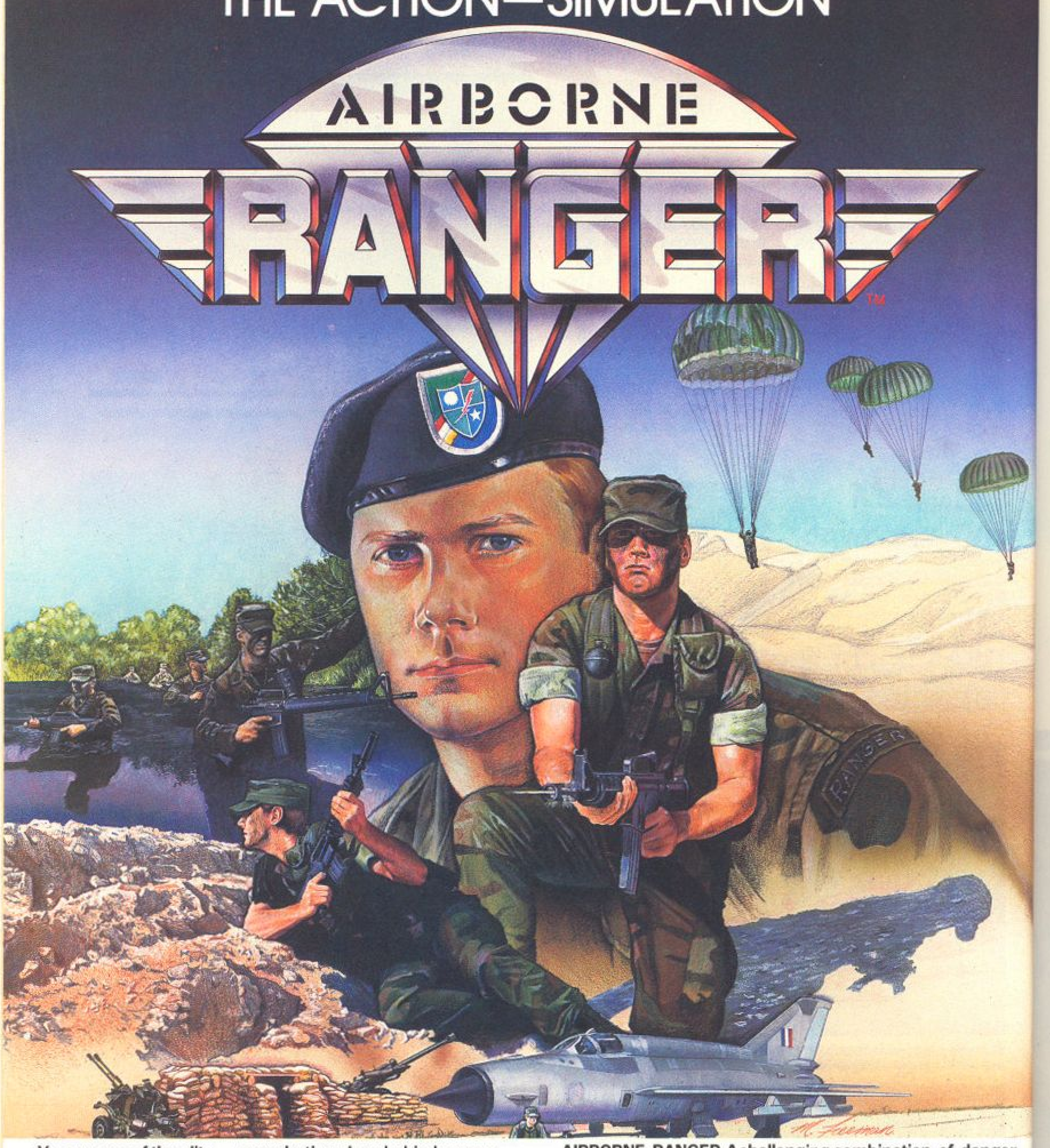


This classy-looking arcade adventure drops you into a mediaeval miasma of magic, mystery and (ulp!) monsters. The gameplay leads you through the flip-screen interior of the castle and out into the scrolling woods as your cutesy jester character is attacked from all sides. The game probably won't be finished until March or so but it's looking great already, with marvellous animation on the main character and some great backgrounds too.



ST: The woods are no place to be if you're small enough for a bird to carry you off.

THE ACTION—SIMULATION



You are one of the elite . . . parachuting alone behind enemy lines. The enemy controls the terrain, hidden in bunkers and machine gun nests . . .you may be surrounded. The action is fierce as you control one soldier's battle against overwhelming odds. You'll need skill and strategy to outmanoeuvre your enemy, plus courage and some luck to make your escape. Airborne Ranger is an exciting fast-paced simulation with 12 desperate missions in 3 different regions of the world. The possibilities are endless!

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ACE LETTERS

The preoccupations of the festive season have not weakened your desire to air your views – the letters have continued to pour in. Most of them have been full of interesting comment – on censorship, piracy, arcade machine tweaking, and much more. But if we get any more letters from 18 year-olds asking if their score on *Bubble Bobble* is a record.- ....there will be BIG TROUBLE. Everyone else is welcome to send letters to

ACE LETTERS 4 QUEEN STREEET
BATH BA1 1EJ

Joining the Elite

Firstly I would like to say how good your magazine is. It is packed with more information and software news about my computer than the magazine I get for my Atari 520 STM.

Now, I have just upgraded from a BBC computer to the Atari. I used to play *Elite* on the BBC and really enjoyed it, so I was wondering if it is due to come out for the Atari.

Gary Roberts
Rochdale

Since I got rid of my C64 and changed to an Amiga, I have missed the game *Elite* and wondered if you could tell me whether or not any of the software companies are in the process of making the game for the Amiga as, so far, I have not found a game with as much of a challenge.

Des Smith
Galashiels

There's good news for both of you; Elite should be available for Amiga and ST by the middle of the year.

Hole in One

Can you please answer this question; has anyone got a hole in one on *Leader Board* yet? I've been trying for EONS.

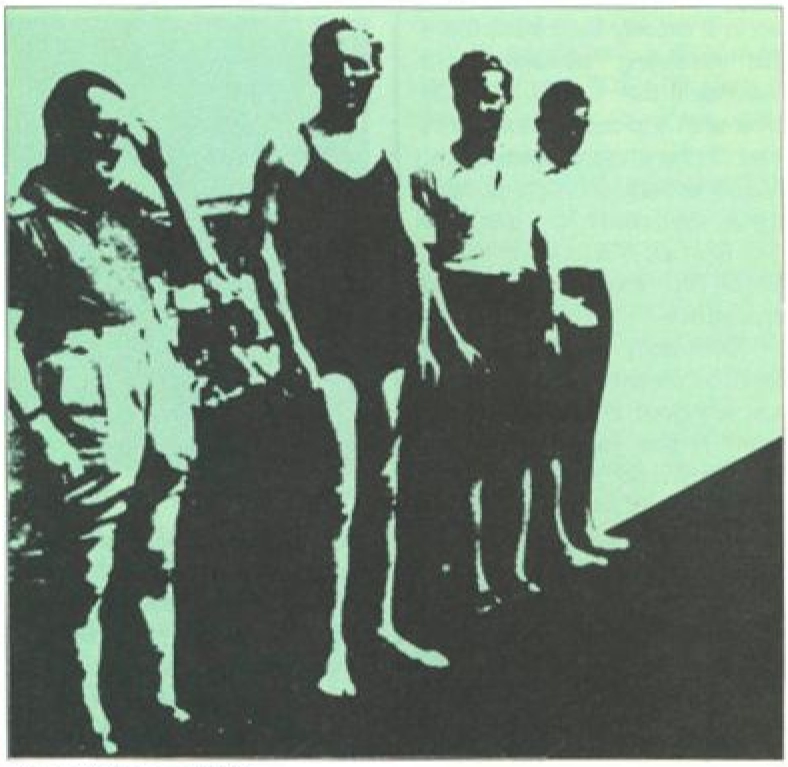
Incidently, we're all computer hardcases here and think your magazine is the best on show and can't be beaten!!

S P Law
Warwick

Nobody round here's ever got a hole in one – but we wouldn't know a golf club from a cricket bat.

Controversy of months ago

I was flicking through your letters page (issue 3) when I noticed a letter from a D Panayi, wanting a debate on the alleged abuse of women in advertising. I became more interested when Maria Whittaker's name cropped up. The *Barbarian* ad sprung up all kings of arguments, but one fact everyone failed to mention is that there was a bloke in the ad too, equally scantily clad, I might mention, though I didn't read anything from anyone complaining. Is it all right to see sexy men, but not right to see sexy women? I actually found the ad very degrading to men – what with the bloke having to wear that awful wig...



Are these bodies being expoited

Anyway, the point of this letter is that women don't need blokes, especially ones like Mr Panayi, to speak for them. In fact, most women I know would find his attitude very condescending. I'd credit women with a might more intelligence and back-bone if I were you – women are far more cunning than men anyway, and they know what they're doing. So it's time for us boys to shut up, and the girls to have their say.

MB
Dewsbury

I think you'll agree, Mr. B, that womens's scantily-clad bods feature rather more frequently in ads than men's. Do women find D. Panayi's speaking up on their behalf 'condescending'? It's hard to tell, because we haven't had any letters from women on this subject. If we do get any, we'll certainly print them.

REWARDS!

In recognition of outstanding epistolary achievement ACE Letters will, from our next issue on, be awarding **FREE SOFTWARE** to 3 writers every month. One lucky correspondent will be receive our Letter of the Month award – software to the value of £25.

So please remember to add to your letter details of the computer you have, and the game(s) you would prefer to receive.

Allergic to Sugar

More on the 16-bit computer (especially Amiga). Less on the 8-bit computers (especially Amstrads) Excellent reviews but perhaps you could have second opinions, included by the other reviewers incuding their personal ratings.

The Pilgrim's great but a helpline would be good, and also larger pictures of the 16 bits and smaller ones of the 8-bits and please, some pictures have looked very dull especially the *Terrapods* and *Jinxter* ones.

Play By Mail is rubbish and boring. Get rid of it...please. Though the sound and graphics specials are very interesting, 'Of strategic importance' was unfortunately of very little importance, and nearly sent me to sleep. If there are others who do like it then, perhaps it could be made bi-monthly with 'of stratetgic little importance' and PBM taking turns. The article on the upgrade stakes was very good but could-have gone futher still, like would a monitor/tv (RGB) combination telly be able to show the Amiga's 400 lines. Also if you are trying to set up a stable market for the 16-bit machines you should emphasise they'll be around for a long time and that your 'in the future' is still some way off.

Now to the controversial bit, the Arcade feature. I have a feeling I am in a minority but I didn't find it that interesting, although I can understand that it does in a way show what is to come on the games front. On the whole, congratulations. ACE is brilliant, although, perhaps slightly overpriced? No I didn't say that. After all, ACE is full of colour, full of info, and free tapes, and expensive.

Don't worry, I don't expect this bit to be printed. After all, I never was any good at English, it's just meant to give you some suggestions. As you can see I have a very strong dislike of Alan Sugar and his computers and what he did to the Spectrum, adding a lousy tape recorder, then a disk drive with not enough storage, and with his 'Sinclair approved' games casettes which normally turn out to be the worst programs. The computer market should be more independent with more small firms making add-ons, that's what made the computer scene so exciting. And Alan Sugar treats past purchasers badly (remember the 464) and the way he priced the +3. Sorry but I can't stand the man, someone give me a machine gun...

Neil Wilson

The glamorous world of computer journalism

You're certainly a fellow with some strong opinions. PBM and the strategy piece are both occasional rather than monthly ; you might not be interested in them, but lots of other people are. Arcades is, as you rightly suspect, one of the more popular sections in ACE, so we could hardly get rid of it just on your recommendation. As for Alan Sugar, love him or hate him, you just can't ignore him....

Gis a job

I am writing to ask what qualifications I would need to apply for a position on your computer magazine. I would like very much to be a computer journalist and I would be prepared to start as a junior.

I am 16 years old in January and I am taking GCSE exams in English, Maths, Chemistry, Physics, History, French and Design and Communication at Meridien senior school, and Computer Studies as an extra subject at evening classes. I have already passed the Cambridge Information Technology word processing exam earlier this year.

I have owned a Commodore 64 for the past four years and I now own an Atari ST. I spend most of my time on the computer and I am currently working on my project for my computer exam with my Atari ST.

JET-BOYS
CRL
WOLFMAN
C64 ARCADE ACTION
C64, SPEC, AMS, ADVENTURE
ARCA
TOUGH GAMES FOR A TOU
DON'T FORGET TO GET THE LATEST CRL POSTER FROM YOUR FAVOURI WARE

I would be grateful if you could send me any details of how to apply, to get started on the career I have chosen.

Lee Bath
Royston

There's no hard and fast rule about the qualifactions needed to become a computer journalist. Obviously an interest in and knowledge of computers is a big help; and the ability to write well (and quickly) doesn't go amiss. Of course, it's matter of showing to people that you have these skills, which is where paper qualifications come in handy. O and A levels in English and Computer Studies can be useful, as can professional qualifications from the universities or places such as the London College of Printing.

All that said, I have to admit that most of the people here (and on other magaznes that we know of) came to computer journalism by roundabout routes; an interest in computers and computer entertainment went hand in hand with the desire and ability to write about them. Your best way of getting in to the business is to start writing and sending in your work to magazines; if editors think it's good, then they will keep you on file and possibly get in touch when a vacancy arises. In the meantime, keep studying and pursuing your computing interests.

TOS troubles

I purchased an Atari 520 STFM from W H Smith on the 13th November 1987, with it they supplied eight discs. Of the eight, five do not work correctly, if at all. An additional title, *Road Runner*, also does not work.

Atari have said that the new machines being shipped have the latest TOS revision 1.09 and this is the reason the titles do not work. How do you find out what revision your TOS is?

Please would you and your readers help to compile a list of working titles for revision 1.09 TOS? Perhaps this will encourage the software houses to move. *Star Trek* has appeared on the shop shelves with a sticker saying that it is for 1.08 TOS and below only.

Mr G C Noakes
Basildon

Atari have only ever had two versions of the operating system, and any ST bought lately is likely to be the latest one, TOS 1.09. Quite a few leading titles do not run under this, and your only solution is to take them back to the shops or send them back to the suppliers. Most software houses are planning

Diary? What diary?

I have bought your magazine from issue one and think it is superb helped by its superior quality printing and more mature articles than other computer magazines I could mention.

After purchasing issue four, I got home and then realised that the free diary mentioned was meant to be on the front cover of my magazine which there wasn't. I went back to the shop where I purchased it but they said that they didn't know where it was or if there was one. Naturally, I was disappointed and wonder if I could obtain one from you even if it means buying one.

John Baker
Kibworth Beauchamp

Yesterday (Friday 4th December) I told my Mum to go to the newsagents and see if ACE was in. It wasn't. I repeated the instruction on Saturday. Hooray! It was in. She had bought it!

I looked at the cover – 'free diary'. I couldn't see it. Asked my mum – she didn't know anything. I checked the car – no luck. I went down to the newsagents and asked if I could have one, as the other one must have been stolen from my copy in the shop. The newsagents refused (I do not blame them), so I do not have my 'free' diary. Could you perhaps send me a copy please?

David Hood
Glasgow

Quite a few people have been experiencing difficulties with the diaries – largely due to them not being on the front of the magazine. Either they fell off, or – more likely – were ripped off by unscrupulous non-purchasers. If you bought a copy and didn't get your diary send a stamped addressed envelope to ***ACE DIARY, ACE, 4 QUEEN STREET, BATH BA1 1EJ***

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ARTIST MARTIN ATTON 87
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Electronic Arts, 11/49 Station Road, Langley, Berks SL3 8YX, England
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to upgrade the more popular incompatible titles. However, given the number of titles which do not work with your machine it could be that you have a faulty disk drive. Check that out first.

Gulliver's Travails

I would like to express my views about type-in listings. I think that they are very entertaining and I violently disagree with your point of view, for two simple reasons. Firstly, it generally doesn't take more than two hours to type in a BASIC prog of respectable length. Secondly, many of them are not as amazingly sub-standard as you seem to think. Recently I spent 1.75 hours typing in a listing for my Spectrum and was too rather surprised for words at the quality. It was approaching that of a professional game of a year or two back. It also only took 3.5 'precious' and 'valuable' pages in quite large print.

I would also like to make one more point; how many people apart from you have written against listings?

Angus Gulliver
Letchworth

Since we don't have listings, and we've repeatedly said that we won't be having them, who on earth is going to go to the trouble of writing a letter asking us not to run them? Eh? Yours is only the the fourth or fifth letter we've had asking for listings to be introduced.

3.5 pages strikes me as rather a lot; as does 1.75 hours of typing the program in. I repeat; we will not be printing program listings.

Is this a problem?

Congratulations on an interesting and appealing magazine. As most, I too find it gives a good insight into home computers and software. But I didn't write into praise your magazine with accolades, I have what I consider to be a big dilemma. I have £500 or thereabouts to spend on a home computer, either an Atari 1040ST or an Amiga 500. For some this may not seem like a problem, but my reasons for purchasing a computer may underline my problem.

I am presently studying for A levels in Accounts, Geography, Business Studies and a powerful wordprocessor is a must. Also I am studying for GCSE computer studies and it would be useful if I could use a database, spreadsheet, and a drawing package for extra help at home. The final point I don't really like to admit, but I am an old Speccy user and would appreciate some good games.

Please don't repeat the specifications of either machine, give me your opinion of which would most suit my needs.

A Churchill
London

There's plenty of the serious software you mention for both ST and Amiga; whichever one you get, you should find something that will suit you. If you are going to do lots of spreadsheeting and databasing, you may want to spend some money on a hard disk. Your only real problem, as far as we can see, is deciding which machine will get more support on the games front. At the moment the Atari ST has has more , but that is not to say that the Amiga will not catch up in 88. But we haven't really got a clearer idea than you at the moment...

Desperate Dell

I am writing on behalf of my 13 year old son, Dell, who is desperate to obtain the computer game *Journey's End* for his Sinclair Spectrum.

We have tried endless stores but to no avail. Please could you inform us on how to obtain it.

Mrs A D Hill
Telford

First of all., try getting in touch with the publishers, Mastertronic (01-377 6880). If they no longer produce it and have no old stocks, try putting a small ad for the game in our PinkPages; somebody out there is bound to have one.

Taken to task

I feel I must take you to task over your article in the 'Pink Pages' stating that the Spectrum is a 'games machine and should be bought only as such'.

Whilst I freely admit that well over half the time spent on my Spectrum 128 is games orientated (hence I'm such an avid reader of your excellent mag!), I also make use of it for a host of 'serious' applications. These include some pretty involved spreadsheets for my darts team's statistics and home accounts (using *Vu-Calc*), masses of word processing (*Tasword*) , learning new programming languages (*SpecForth* and *Logo*), musical composition (*Musicbox* and *Echosoft* synthesiser) etc, all of which my Spectrum handles admirably.

I realise of course that the Spectrum cannot realistically compete with 16 bit machines in terms of either serious software or games (although the 128K version of *Starglider* comes mighty close!), however, I do maintain that, amongst its 8 bit rivals, the Spectrum compares quite favourably due to its good sound processing (the same chip as the ST excluding the obsolete 48K Spectrums), fast graphics capability (C64 games crawl along in comparison),a user base and software availability you rightly state is 'second to none' and last but not least, the low cost of the machine itself and its peripherals and software (I picked up all of the software packages I mention above for under a fiver each – and the synth for a tenner).

Sure, I'd love an Amiga or ST, but after breaking the bank to purchase one and then being charged around £25 a shot for software, I certainly couldn't afford to own a software library a tenth of the size I currently enjoy.

So please don't write the Spectrum off as a games-only machine (I suspect the rather juvenile content of some Spectrum mags has something to do with this idea). Remember it was originally designed as a serious machine and being such a supreme all-rounder, still represents an ideal choice for those of us who like to combine business and pleasure and aren't made of money.

Grant Punchard
Aldershot

You have a fair point, Grant, and you've made it very forcefully; lots of people have 'made do' with Spectrums for serious purposes. But making do is what it's all about; if you were going out now to buy a new micro, bearing in mind all the word-processing, stats and music you wanted to do, could you seriously consider a Spectrum? We don't want to be nasty to the Spectrum – it's done sterling service over the years – but it isn't really a machine you could run your business with.

Arcade rip-off

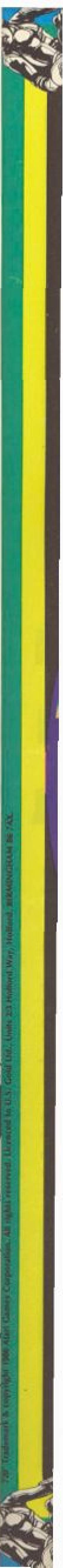
I do not know if people who visit arcades realise just how much they can be ripped off, not just by over-pricing, but by by the game's level of play. Most of the modern arcade machines today include a change that allows the owner to define the main aspects of the game. For instance – lives per credit difficulty levels, bonus adders, player histograms, hi-score resets, etc.

Many small arcades get greedy, and make the game very pricey and as hard as it will go. Two examples of this; a *720 Degrees* machine that gives you no tickets at the start of the game, and a ridiculously hard *After Burner* that makes it almost impossible to dodge the enemy missiles.

Should the makers not be stopped from making games this hard? I would like to know what other readers think.

Craig Freeman
Worcester

We too would like to hear from other readers who know of this sort of thing going on. And we'll look in to it ourselves.



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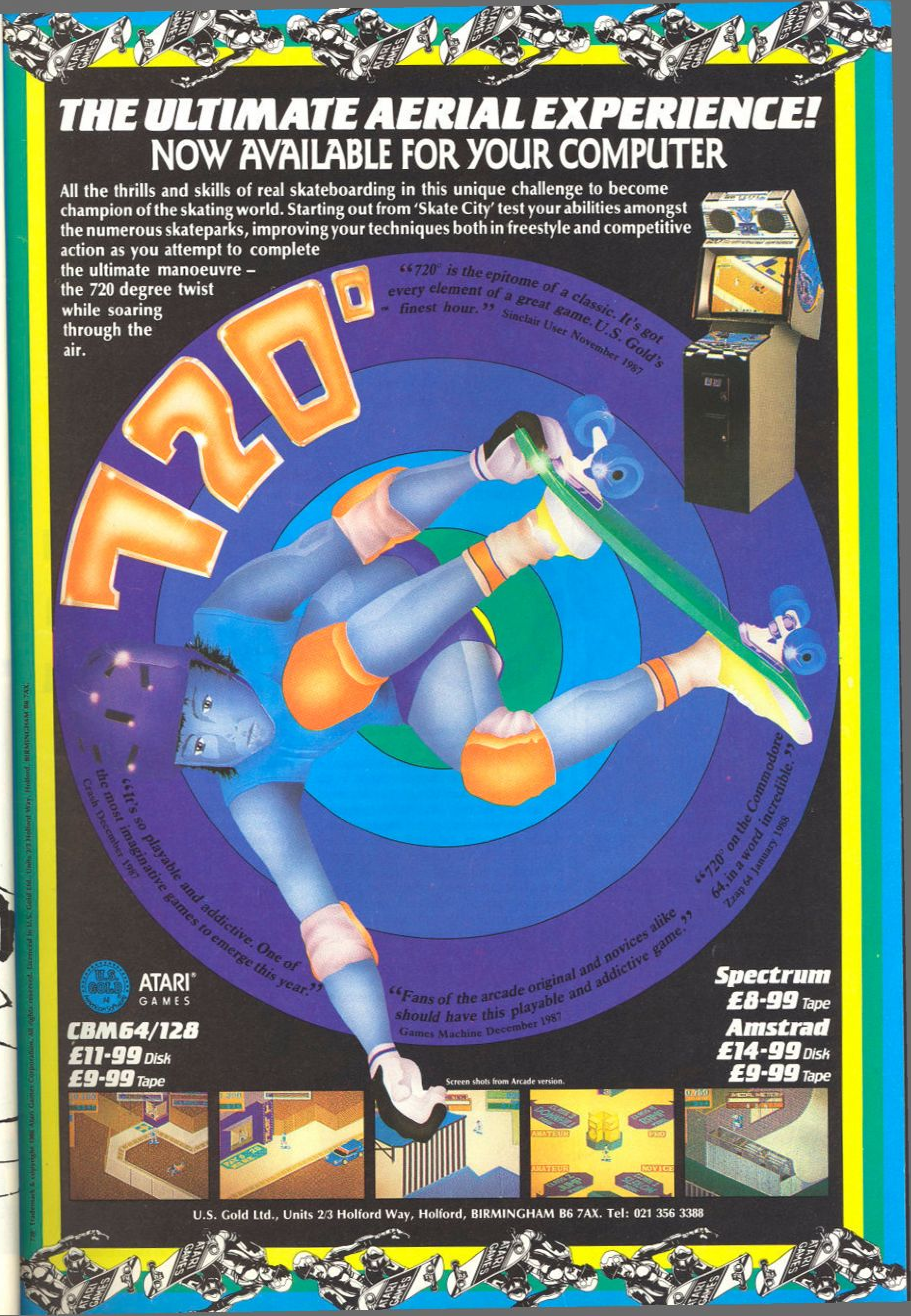

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All the thrills and skills of real skateboarding in this unique challenge to become champion of the skating world. Starting out from 'Skate City' test your abilities amongst the numerous skateparks, improving your techniques both in freestyle and competitive action as you attempt to complete the ultimate manoeuvre – the 720 degree twist while soaring through the air.

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"It's so playable and addictive. One of the most imaginative games to emerge this year." Crash December 1987

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Screen shots from Arcade version.

U.S. Gold Ltd., Units 2/3 Holford Way, Holford, BIRMINGHAM B6 7AX. Tel: 021 356 3388

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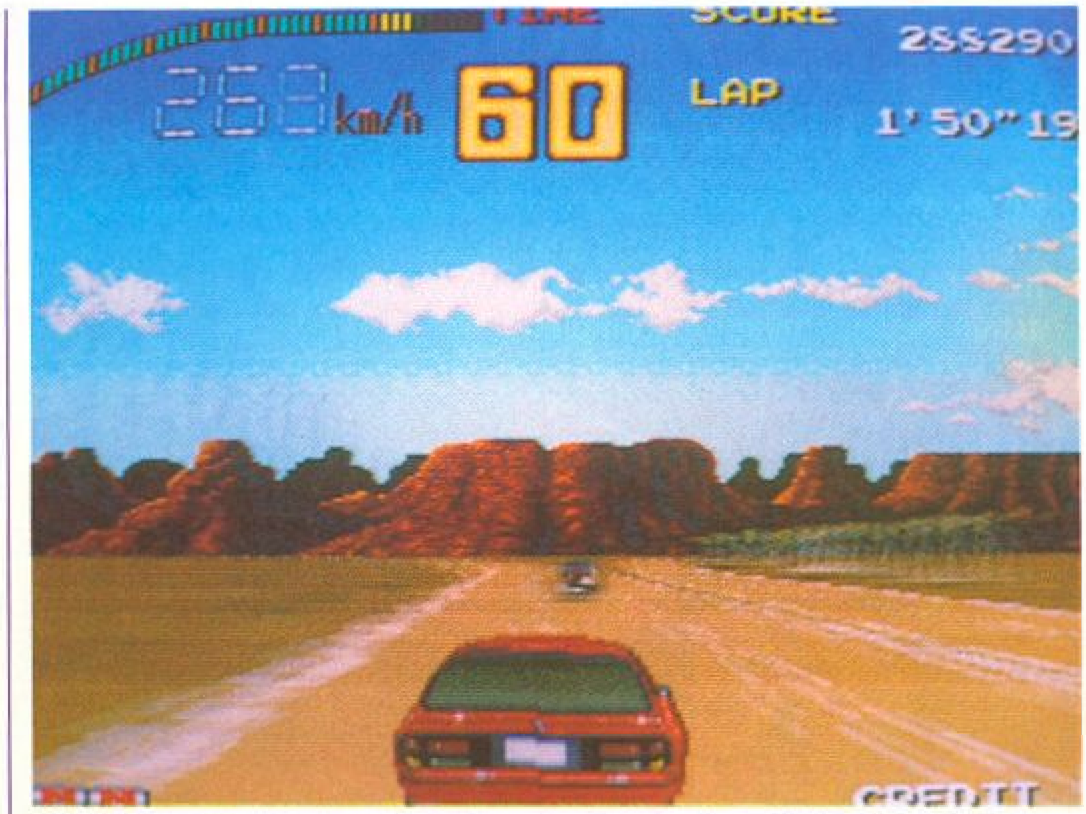
Andy Smith cranks his engine up to *Top Speed* with the help of a little Nitrous Oxide, then knocks off a couple of dinosaurs in *Time Soldier*.



TOP SPEED **On a dirt track headed into the mountains. Pick the wrong lane at the junction and you could add a lot of miles to your journey.**

ARCADE

● TOP SPEED

Taito
50p per game

If you've been burning rubber in *Out Run* or *Le Mans* then put this one on your list. *Top Speed* may have a familiar scenario, but it delivers it with a dose of massive torque that should bring sweat to the brow of even the most hardened speed freak.

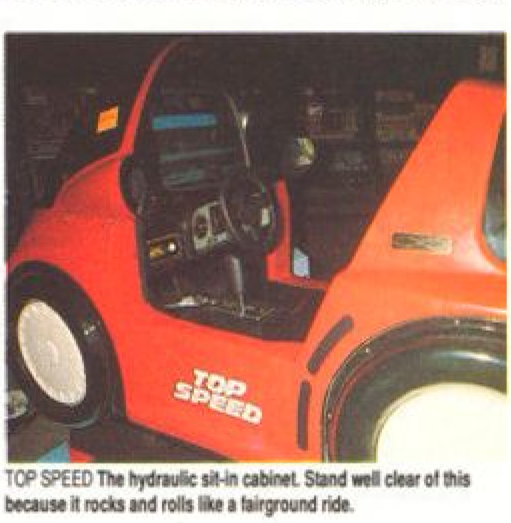
The game makes its appearance in the arcades in two guises; the upright cabinet model and the sit in cabinet version tested here. Controls for the car are as you'd expect from this sort of game: steering wheel, accelerator, brake and gear stick (giving a choice of HI or LO) which together take you through a total of five stages, each within a crippling time limit.

There's also a little extra in the shape of a Nitrous Oxide switch which is situated on top of the gear stick. Activating this switch results in the car surging forward at breakneck speed, wheels smoking and engine whining in true *Mad Max* fashion. Unfortunately the player is limited to just three bursts of NO2 per stage – this might not be such a bad thing because should you happen to hit a tight bend at 400+ kmh it can prove difficult to retain control of the car. These extra bursts of speed cannot, however, be carried over to the next stage.

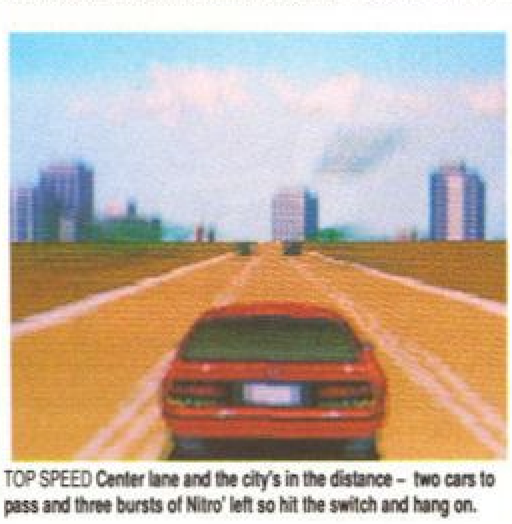
Like most other coin-op car driving games, the player's view of the action is from a position behind and slightly above his car and the ever changing roadways scroll toward him. Besides having to stay on the road and avoid crashing into roadside obstacles, the player has other road users to contend with, including other family saloons and some rather large lorries.

At a point some way into the stage the player arrives at a fork in the road and must quickly decide which route to take, both routes converge again some distance further on but selecting the wrong route can have the player covering unnecessary ground and losing valuable seconds.

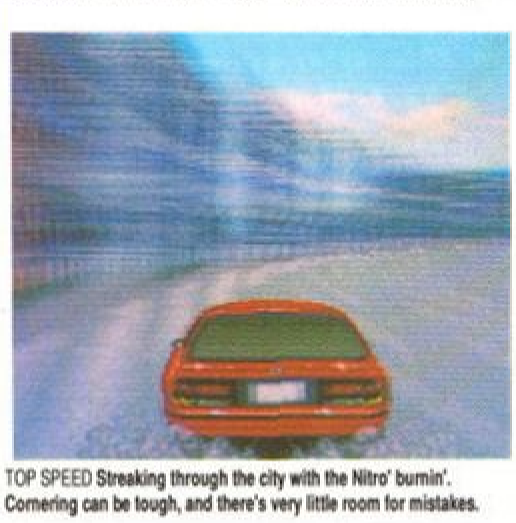
The animation and graphics of the game are superb, at the start of the first stage the player is driving through a city complete with skyscrapers and lamposts, and every section thereafter has different scenery –



TOP SPEED **The hydraulic sit-in cabinet. Stand well clear of this because it rocks and rolls like a fairground ride.**



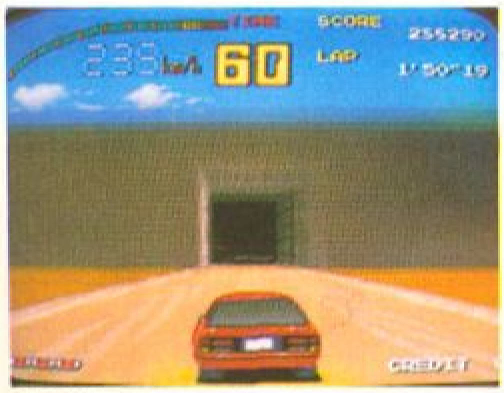
TOP SPEED **Center lane and the city's in the distance – two cars to pass and three bursts of Nitro' left so hit the switch and hang on.**



TOP SPEED **Streaking through the city with the Nitro' burnin'. Cornering can be tough, and there's very little room for mistakes.**

don't expect much time to admire it, though.

The sit-in cabinet is a pretty hairy experience – every rise and fall of the road is copied by the rising and falling cabinet and each corner will have you lurching to one side or other. Crashing is an experience to be avoided by those with false teeth, unless you want to see them end up in your lap. All in all *Top Speed* is a terrific game and if you think the theme is a bit old-hat, climb in and think again...



TOP SPEED **Heading into a tunnel at a fair old rate of knots can prove damaging to your health – visibility is poor and don't even think of scraping the sides.**

FREE SOFTWARE!

Get those muscles flexing, get those scores soaring, and get your hands on some red-hot software for your machine *absolutely free.* Every month we're awarding juicy prizes for the best arcade tips printed in the magazine – last month it was Will Downing of Daventry who copped the crumpet – next month it could be YOU! Send in your tips, stating which machine you own, to: Arcade Tips, ACE, 4 Queen Street, Bath, BA1 1EJ.

ACE

• TIME SOLDIERS

SNK

20p per game

This vertically scrolling shoot-em-up has you in charge of an on-screen sprite searching for his lost buddies, scattered through three time periods by the evil Geylen – whoever he, she or it may be. You'll find yourself in The Primitive Era (complete with dinosaurs and stone-axe-throwing cavemen); The Roman Period (full of armour-clad legionnaires); and The World Wars (a host of American-looking modern soldiers).

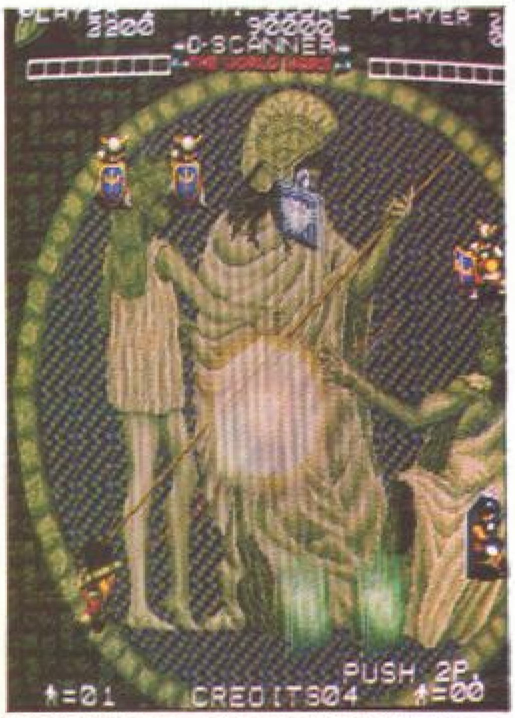
Control of the character involves first twisting a joystick to make your character face one of eight possible directions, then pushing to move in that direction. For example, if your character is facing north and you want him to face east you have to twist the stick two places to the right before moving. This is a tricky system to get to grips with and can have your hand contorted into some uncomfortable positions.

The fire buttons are located beside the joystick and at the start of the game the player has only a front-firing gun. Extra weapons can be picked up by shooting one of the enemies coloured red that appear frequently (and are tougher to kill.) These extra weapons include a scatter gun that fires in three different forward directions at once and high-powered lasers. These are activated by pressing the second fire button. Of course the weapons don't last forever so you have to keep shooting the red chappies for the extras.

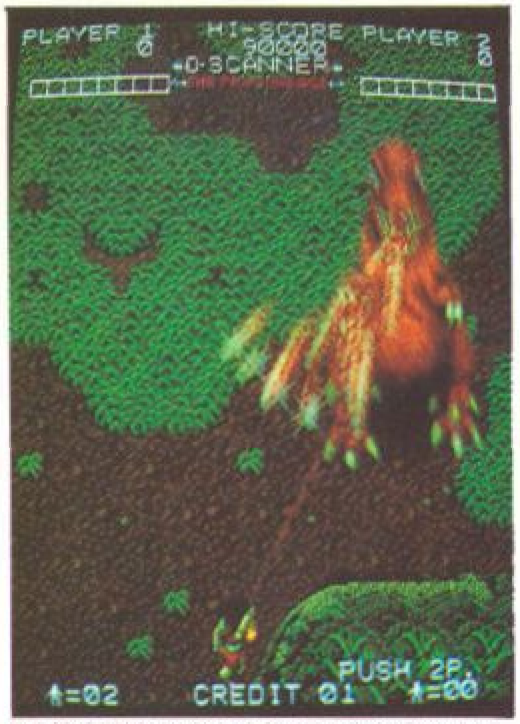
At the start of the game the player is told in which time period one of his chums is to be found and is then transported to another time zone where he has to survive until he can find a transportation zone. These transportation zones are time machines that look like large broken eggs stood on end, just head your player into it and he's transported to another time, another place, and with any luck the right spot for locating your chum.

Once the player has fought his way through the swarms of attacking nasties he will be confronted by the end-of-level guardian and in keeping with the theme of the level, the guardian takes the shape of a dinosaur, a tank or an animal-headed god. Destroy the guardian and one of your chums will be saved, at which point you're told which time period the next chap is in and so on...

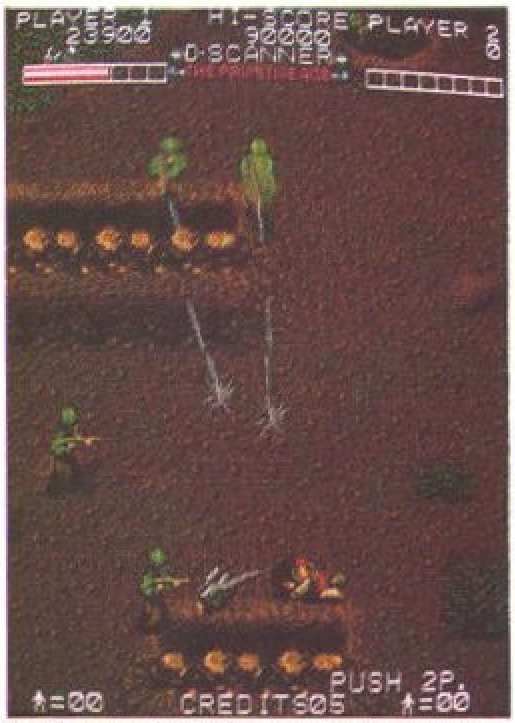
What really makes *Time Soldiers* so enjoyable is its addictiveness and its atmosphere. That and the constant action make for one very playable game that will swollow your 10p's faster than you realise. ●



TIME SOLDIERS **That's you in the bottom left, stuck in the Roman period with your chum in the World Wars age.**



TIME SOLDIERS **Defeat this 'end of level guardian' and one of your chums will be freed.**



TIME SOLDIERS **The World Wars – Those G.I Joes' have removed one of your lives. Serves you right for going for that scatter gun – you knew it was dangerous, but you took the risk.**

SUPER SELECT... ...SUPER

Win Arcadia's fabulous Super Select machine – complete with FOUR stunning games!

No more trips down to the coin-gobbling coin-ops; in this amazing competition ACE and Mastertronic are giving you the chance to become the proud owner of the brand new, revolutionary Super Select system from Arcadia.

This is no ordinary arcade machine. With the Super Select system we're offering you can take your pick of FOUR superb coin-op games – and you won't have to cough up a single, solitary 10p piece.

SUPER
SELECT
SYSTEM

The prize

This is what the lucky winner will receive; a state-of the-art stand-up Super Select System, equipped with joysticks and controllers for one or two player action – and most Super Select games allow two players to compete.

What You Have To Do

To the right you will find four screen shot sections. Each one is taken from a different Arcadia Super Select game, as shown elsewhere on these pages. All you have to do is match up the section with game it was taken from, write your answers on the cover-card and then send that in to us. So, for example, if you think section A was taken from World Darts, just write World Darts in the space on the card.

Super Select hardware

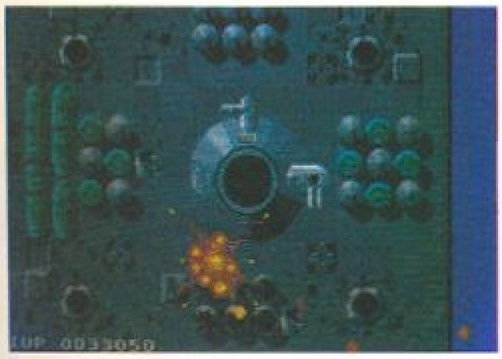
The innovative design Arcadia have come up with means that the Super Select System is able to store up to 10 games. How on earth, you may well ask, can they do it?

It's simple – when you know how. Super Select is constructed around an Amiga Printed Circuit Board. Attached to this at a right angle is a 'piggy-back board', with 10 slots for miniature PCBs. The actual games you can play on a Super Select machine are to be found in here on ROM cartridges, which is how Super Select manages to provide up to 10 games on the one machine.

Super Select Software

If you think thehardware's pretty astonishing, wait till you see the software. The prize machine comes complete with **four** Arcadia corkers, plugged in and ready to go. Each one of them is the sort of thing that is going to have less fortunate mortals emptying their pockets to play down in the arcades.

PRIZE



XENON

A really fast-moving vertically-scrolling shoot-em-up with wickedly classy graphics as you – the lone Federation ship in these parts – battle through the four sectors of 16 zones. You can switch your craft between a ground vehicle and a plane, depending on which you think is more appropritae for destroying the installations and ground-based aliens. Pick up tokens along the way to add firepower and manoeuvreability to your ship.

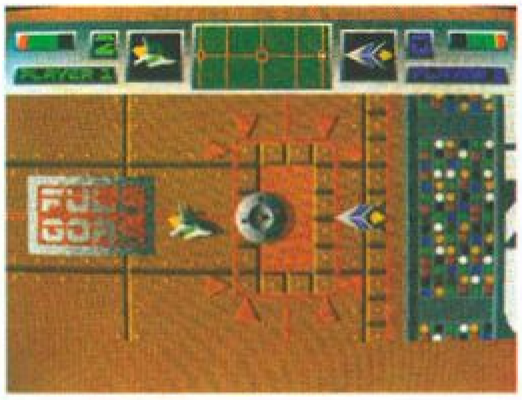
At the start of each stage you will be stunnned by the digitised graphics and sound as your task is announced. At the end of each level you will be horrified by the enormous guardian you must destroy before making any further progress.

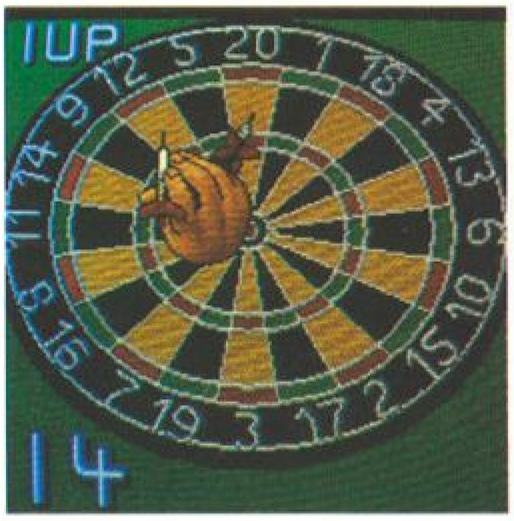
Xenon is a game that any action-fan would spend a lot of 10p pieces trying to beat.

BLASTA BALL

Even in the distant future – and we're talking 3613 AD here – competition is alive and well, especially in Blasta Ball. The object of the game is to score goals by firing the laser on your spaceship so that the ball ends up at our opponent's end of the field – ideally, in the net.

The action is viewed from above the playing field and is centred on a radar-style showing the whole of the pitch. There are barriers on both sides of the pitch, so the ball is alwys in play and the action is always intense.

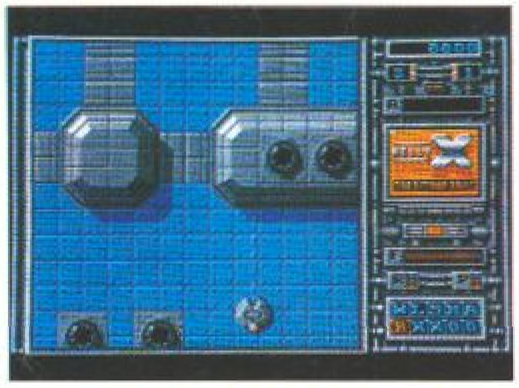




WORLD DARTS

No prizes for guessing what this game's all about; yes, it's on the oche and aim for double top. What will surprise you, though, are the superb graphics.

You play 501 in an international tournament against a series of increasingly skillful opponents. Each player has a distinct style of play, and if you are to make it through to the top levels you'll need to develop your own.

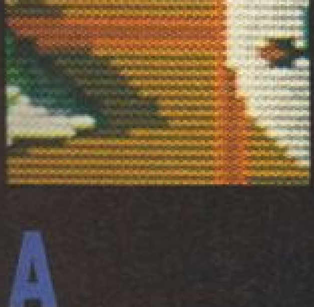


SIDEWINDER

Fly your ship in to the bowels of the evil alien space cruiser 'Star Killer' and destroy it before it destroys the sun. You must negotiate five different levels of 3D maze before reaching Star Killer's command level and getting a chance to put an end to the craft that wants to put us all in the dark.

Rules

1. The closing date for entries is February 14th 1988.
2. Employees of Mastertronic Ltd, Future Publishing Ltd., and their families are ineligible for entry.
3. The winner of the competition shall be the first correct entry drawn at random from among those received prior to the closing date. No correspondence shall be entered in to.
4. The winner will be notified by post and his or her name published in the April issue of ACE.



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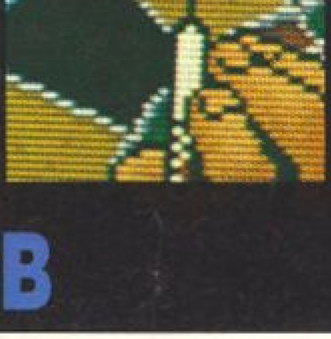

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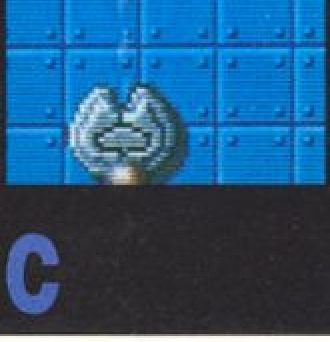

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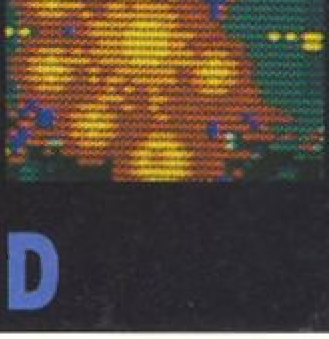

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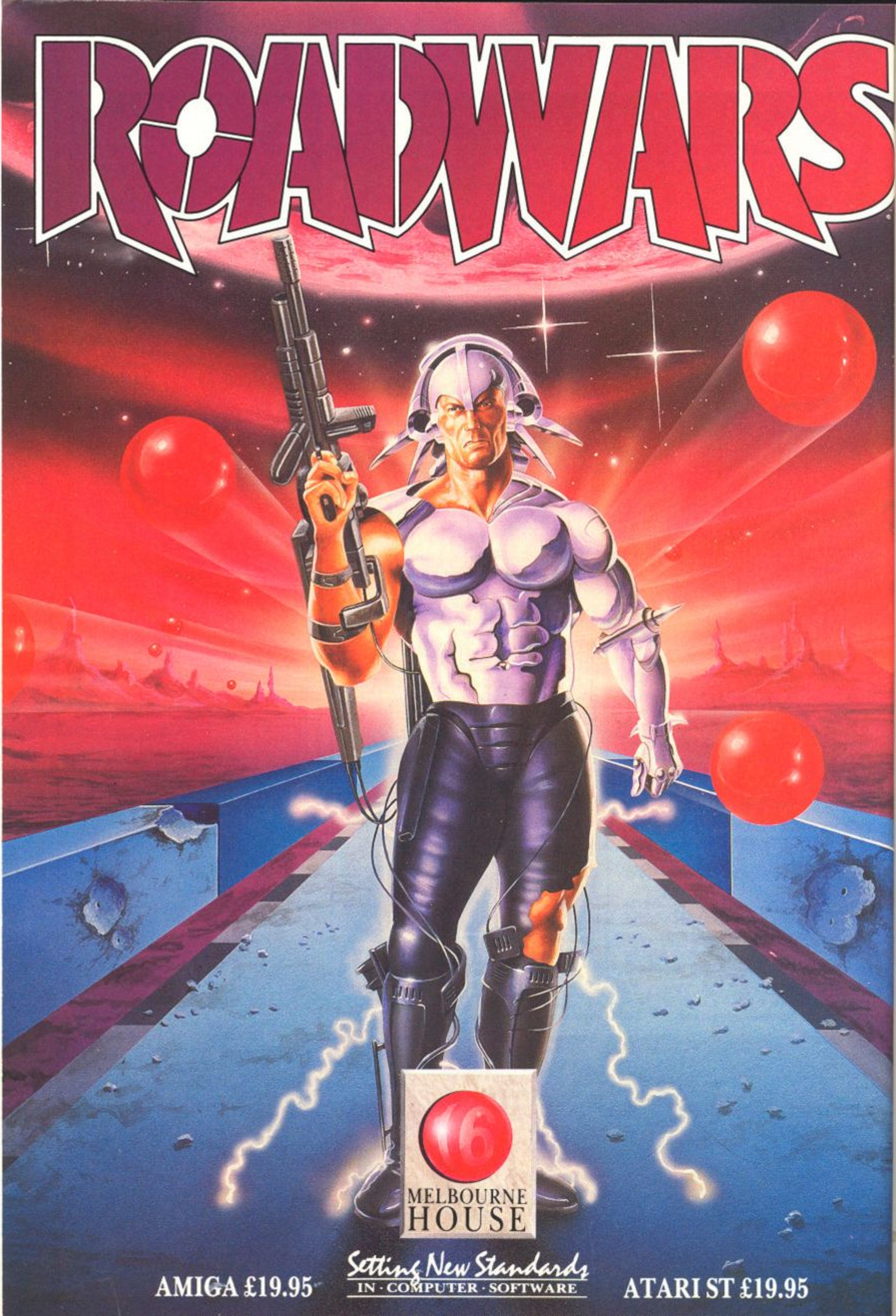
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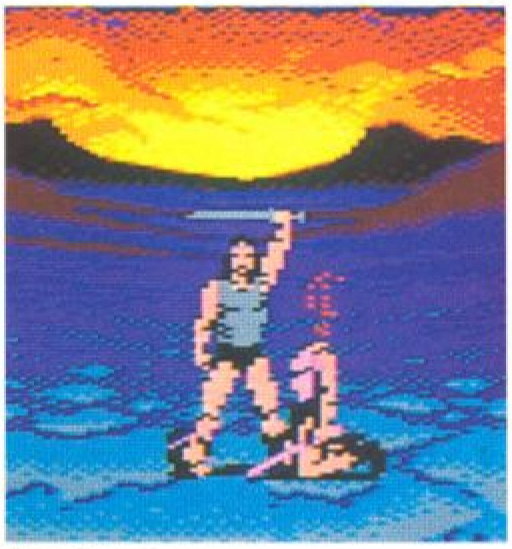
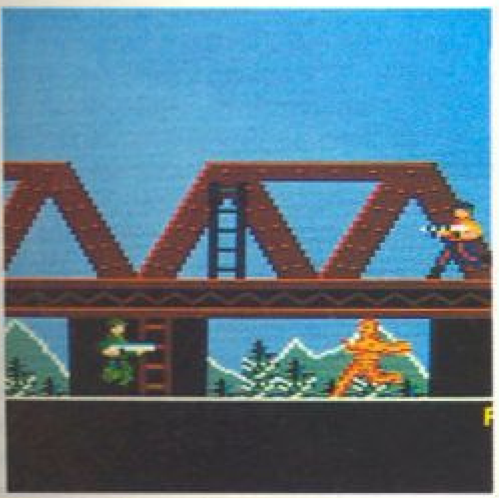


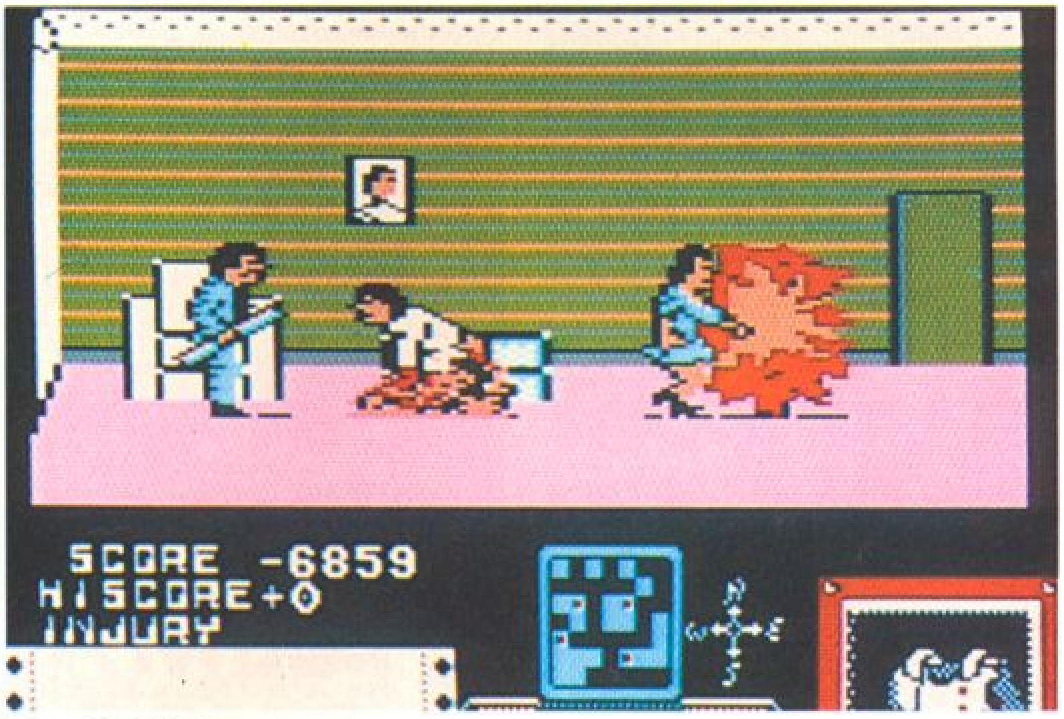
Barbarian
Ooops, he's lost his head again. Excuse me officer, but is that a spot of 'gross violence'?

BARBARIAN – hack off the head. _RENEGADE_ – kick, punch and stomp until the punk's blood flows. _DEATH WISH_ – use pistol, pump-action shotgun and bazooka to massacre the scum (or the police, depending on how you feel). _INTERNATIONAL KARATE_ – chop and punch your opponent in to submission. _GREEN BERET_ – knife the fur-hatted foe, or flame-thrower them if you can.

We've played them all; but should we be able to play them at all? An ACE investigation reveals that all the games above may be breaking the law, simply because they do not carry a certificate from the British Board of Film Certification – the people who decide whether a film or video gets an 18, 15 or PG classification.



Green Beret
Flame throwers come in real handy some times.....



Death Wish
Splat! Does 'gross violence' just refer to the number of people you can kill?

The Video Recordings Act 1984

So what's all the fuss about? The law. In 1983 and 84 public debate raged about the so-called 'video nasties', films of a violent or sexually explicit nature. It was widely believed that with the growth in ownership of video recorders children could be exposed to films which, it was suggested, might have serious psychological effects.

The result was the Video Recordings Act, which sought to bring videos under the same kind of control as films. What's it got to do with games? Well might you ask.

The act concerns *'video works'* and *'video recordings'*. The first of these is defined as: 'any series of visual images (with or without sound) –

(a) produced electronically by the use of information contained on any disc or magnetic tape, and

(b) shown as a moving picture.'

The second term means: 'any disc or magnetic tape containing information by the use of which the whole or the part of a video work may be produced.'

So games should have been submitted for classification all along, just like videos! Well, not quite. A game is specifically excluded from the act – unless (and here comes the interesting bit)

'to any significant extent, it depicts-

(a) human sexual activity or acts of force or gross restraint associated with such activity;

(b) mutilation or torture of, or other acts of gross violence towards, humans or animals;

(c) human genital organs or human urinary or excretory functions;

or is designed to any significant extent to stimulate or encourage anything falling within paragraph (a) or, in the case of anything falling within paragraph (b), is designed to any extent to do so.'

So, pretty clearly, all those games we've mentioned on this page should have been

So, pretty clearly, all those games we've mentioned on this page should have been submitted to the BBFC for certification before they got on to the shelves of the shops.

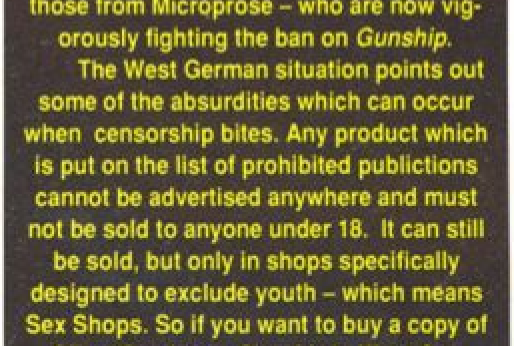
Does it all mean that the games companies are in for visits from officers of the law? How many games might get those 18 certificate which would cut them off from their largest audience? And – horror of horrors – will we now hear calls for censorship of games? For a full discussion of these issues and how they will affect you, read on. ●

West Germany

While here in the UK we're only talking about the *possibility* of certificates and censorship, in West Germany the whole business has been in full swing for several years. *Skyfox, Guadalcanal, Beach Head 2* and, most recently, *Gunship* are just some of the games which have been banned by the *Bundesprufstelle Fur Jugendgefahrdende Schriften.*

This august body translates in to English as the *Federal Office for the Examination of Harmful Publications*, set up in the 50s to protect German youth from morally corrupting publications in a variety of media. Works likely to corrupt are defined as 'immoral or brutalising ones or those which incite violence, crime or racial hatred or glorify war.' So far it's the war games which have suffered, in particular, those from Microprose – who are now vigorously fighting the ban on *Gunship.*

The West German situation points out some of the absurdities which can occur when censorship bites. Any product which is put on the list of prohibited publictions cannot be advertised anywhere and must not be sold to anyone under 18. It can still be sold, but only in shops specifically designed to exclude youth – which means Sex Shops. So if you want to buy a copy of *Silent Service* or *Gunship* in West Germany, you could find yourself among some interesting reading matter...



THE CERTIFICATORS

The business of granting certificates to films, videos and computer games is carried out by the British Board of Film Classification. Every time you go to the cinema you see their certificate before the film starts. ACE went to see the BBFC Secretary, James Ferman and Deputy Director Ken Penry, with a selection of recent games we'd video taped. We wanted their views on whether the games should have been submitted to the BBFC, and – if they had been submitted – what kind of certificates they would have got.

First off was Palace Software's *Barbarian*, on the ST. Would the decapitation appal them? Far from it; it was merely 'storybook violence', James Ferman said. But, he added, it probably *should* have been submitted before release, as one could argue that it contains scenes of 'gross violence'. But it would probably have received a PG certificate, which means that although parents might not wish their children to see it, those children would not be prevented from buying the game in a shop. A similar opinion was expressed about Gremlin's *Death Wish 3*.

This brings us on to another problem; just what is 'gross violence'? The Video Recordings Act does not define it, nor does the BBFC. It's a matter for the courts', says James Ferman. And, presumably, a matter that producers of a game have to determine for themselves before deciding whether they ought, or ought not, to submit games to the BBFC.

The BBFC has only ever been called upon to classify three games – all from CRL – and they are not really equipped to deal with a flood of programs. As yet, they do not even have a home computer, let alone the whole range of popular micros. CRL have submitted their games on videotape, with a printout of the text (all have been graphics adventures). Such a form of scrutiny will do for adventures, but for an arcade or arcade-adventure it's hard to see how you could easily tape the whole thing. Expert evaluators would be needed – but they'd have to be

THE SOFTWARE HOUSES HAVE THEIR SAY

Palace

Pete Stone of Palace, producers of *Barbarian*, is aware now of the Act, but says that at the time *Barbarian* was released 'it didn't cross our minds. But I honestly don't feel that *Barbarian* is a case where the Act applies.' Pete Stone believes that *Barbarian* is very much in the mould of fantasy, cartoon-style action;' If I strongly felt that *Barbarian* would incite violence, I wouldn't release it. But I don't believe it does.'

Will he submit games to the BBFC in future? 'If it became the accepted thing...'

CRL

Clement Chambers of CRL is the man at the centre of the storm. He vigorously denies allegations that *Jack the Ripper* was submitted to the BBFC merely as a publicity stunt.

Indeed, in his defence, he takes the high moral ground; 'we were concerned that certain categories of people should be protected,' he says. 'If there hadn't been any procedure to get a certificate we'd have toned it down significantly.' He goes on to claim that *Jack* is 'a breakthrough' in computer entertainment, bringing hitherto undreamed of 'drama and excitement' to the consumer. 'The better the game', Chambers maintains,'the greater the effect it has.'

He also feels that he has bewn the victim of a backlash from other figures in the software industry, because *Jack the Ripper* has 'brought attention to people breaking the law.'

And what about the fact that the game may not have needed a certificate after all? 'I'm not a solicitor', says Clement Chambers.

Activision

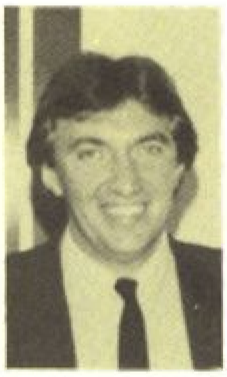
Clare Hirsch says that Activision is aware of the implications of the VRA but that company policy is to avoid games of a particularly gruesome nature. She'd 'hate to think we'd have to submit a game like *Rampage*. It's so mindless.' Computer images, she feels, are so much less realistic than videos that the same procedures should not apply.

She goes on to make the point – voiced by many other people, software houses included – that a game 'attracts a teenage audience as soon as you say it's not for them.'

She also points to the practical problems for software houses in getting certificates in a fast-moving market where it's essential to get a game out as quickly as possible after its completion.

US Gold

US Gold are another company who've felt the censor's lash in West Germany. Their latest game to fall foul of the Bundespruf..-.etc. is *Express Raider*, a coin-op conversion.



Tim Chaney, US Gold's Operations Manager, believes the ban to be ridiculous, and the company are fighting the case in Germany at the moment.

As far as our very own VRA is concerned Chaney says that he 'wasn't aware it covered computer games'. While US Gold, he says, 'have had plenty of violent games', he doesn't believe that the kind of violence they contain is anything more than Tom and Jerry cartoon-style stuff. US Gold, he suggest, is unlikely to start submitting games for classification unless everybody else does.

Electronic Arts

The US giants haven't been established too long in the UK, but they're well aware of the law; not least because they are CRL's distributors.

Mark Lewis, EA's boss on this side of the Atlantic, doesn't think the VRA will affect the company's own software games; 'I can't imagine EA producing such titles', he says. 'We're in the business of home computing – and that means for Mom and Dad and the kids.'

He reckons that the nature of computer graphics – including 16-bit software – is such that violence in games is not a real problem; 'Until we have really good CDI the graphics are lacking.'

He would, though,like to see the software houses get together to discuss the issues; 'I would love', he says,'to see a participatory body here to discuss not only the problems of the industry but new oppportunities for growth.'

Microprose

Wild Bill's outfit have suffered more than most in the German wars; they've had several war simulation programs banned. On the question of submiting games for classification over here, Marketing manager Colin Bastable says; 'We certainly wouldn't submit a game just to get the publicity.' Microprose games, he believes, do not really fall within the terms of the VRA.

What now?

None of the software houses we spoke to seemed ready to take the plunge and start submiting games to the BBFC for classification. As long as they genuinely believe that their products do not contain 'gross violence' or any of the other factors the act mentions then they have a very strong case for not submitting programs.

So is anyone else likely to take steps to bring computer entertainment under closer scrutiny? At the moment, it's hard to see who would do so. The BBFC is unlikely to take any direct action; as their Deputy Director Ken Penry says; 'It's not our job to police the act.'

But it is possible that at some stage the police or an individual could bring a private prosecution against a particular company, or retailer. It only needs one such case for computer games to be brought under the spotlight of adverse publicity.

As the technology of computer entertainment progresses, the chances of this happening must increase; while 8-bit and even 16-bit micros may not quite have the graphics power to truly shock us, CD-ROM and transputers certainly will.

By then the software producers ought at least have met to discuss the issues, their responsibilities and their response. If they have not, then computer games could be at the mercy of any crusader who wishes to get a bit of cheap publicity by 'exposing the computer game nasties'. ●

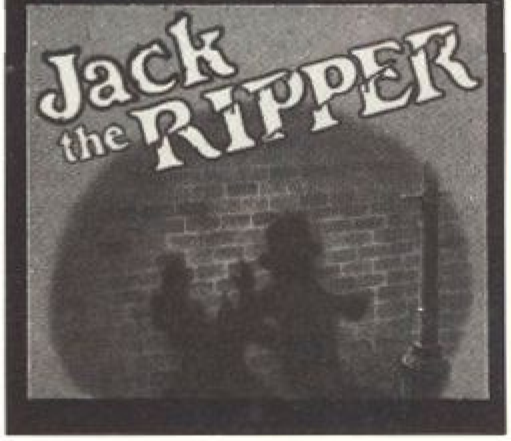
Jack the Ripper – why it *doesn't* need a certificate

Irony of ironies – it seems that the game that's caused all the fuss, CRL's *Jack the Ripper*, doesn't need a certificate after all. The game is a an adventure, with graphics. The pictures – which caused the problems – are all still. Now, the Video Recordings Act defines a 'video work' as: 'any series of visual images (with or without sound)–

(a) produced electronically by the use of information contained on magnetic disc or tape, and

(b) shown as a moving picture.'

Clearly, a still illustration is not a 'moving picture'. Similarly, while the game's text may well be a series of visual images, it obviously *isn't* shown as 'a moving picture.' Which all seems to point to *Jack the Ripper* not needing the certificate after all, and the whole furore being a storm in a tea-cup.



VIOLENT GAMES – VIOLENT PEOPLE?

Is there any persuasive evidence to suggest that the games you play can influence your behaviour? Could you become a raving psycopath through playing *Hack-em-Up 2*?

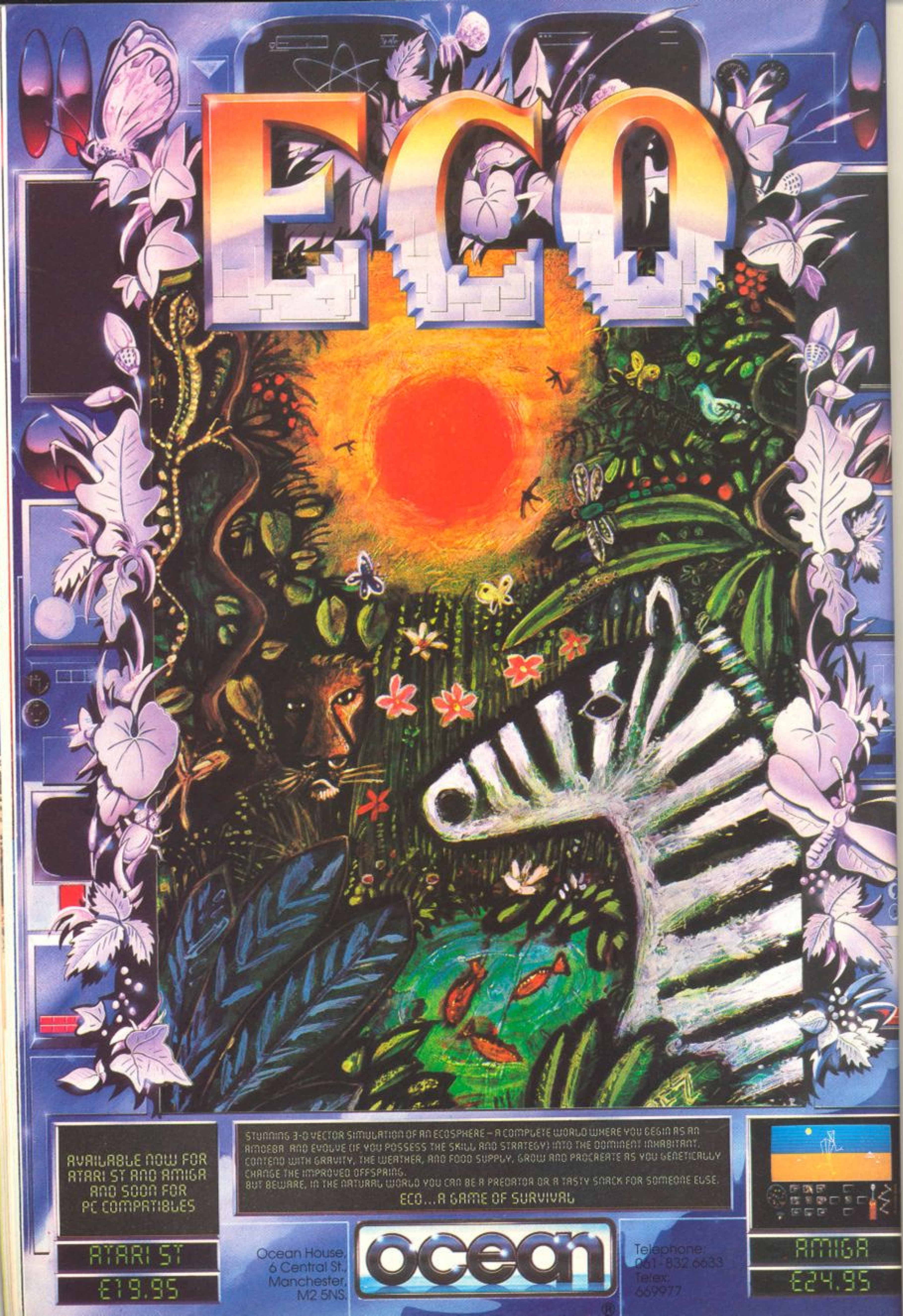
Relax – it seems unlikely that you're in any great danger. Martin Barker, Senior Lecturer in Communications at Bristol Polytechnic, has made a study over a number of years on the media, their effect on the consumer and the issues of censorship. He thinks that there is no conclusive evidence to prove a link between the entertainment we consume and our subsequent behaviour.

Most of the laboratory research done on the effects of, for example, TV on children assumes, he says, that we are 'passive recipients' – that we just sit there and take the stuff in uncritically. But it seems that the quite the opposite may be the case; even when watching the telly we can be 'active users', commenting on the action and even, when alone, talking back at the screen.

The same goes for computer games, but to a much greater extent. By their very nature, games are interactive; they test your reflexes, they demand a 'judgemental response' (you have to make decisions), you need to work out a pattern, make maps etc. Whatever violence is going on in a game is only a part of the whole process of playing it.

There may even be a sense in which computer violence serves a useful purpose. Games, says Martin Barker, often serve as a retreat from the pressures which surround us; parents, education, work. Violence in a game can sometimes act as a harmless way of hitting back at the things that are bothering us and can help to release tensions and frustrations.

Finally, one of the central points of Martin Barker's views is that violence in games (or any other form of entertainment) must be seen only as a part of the wider whole – society, culture, call it what you will. If we are to make a fuss about *Barbarian* or *International Karate*, then we need to look as well at the TV news, TV programs, cartoons, newspapers, advertisements....and that's a much larger matter.



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GET IN TO GRAPHICS

Part 1 in our new series on graphics techniques

So, you want to brush up your pixel power? With the arrival of sophisticated art software for nearly all 8 and 16 bit machines it seems like a good time for us to provide a guide to advanced computer paintbox technique. Over the next few months some of the secrets of achieving professional-quality pictures on a whole range of machines will be revealed by our resident dauber Brian Larkman.

The software

When it comes to slapping those gobs of pixel around on the old electronic canvas the sophistication of several recent arrivals on the domestic computer graphic scene has shown up the rest of the software market as woefully inadequate, especially for 8 bit machines.

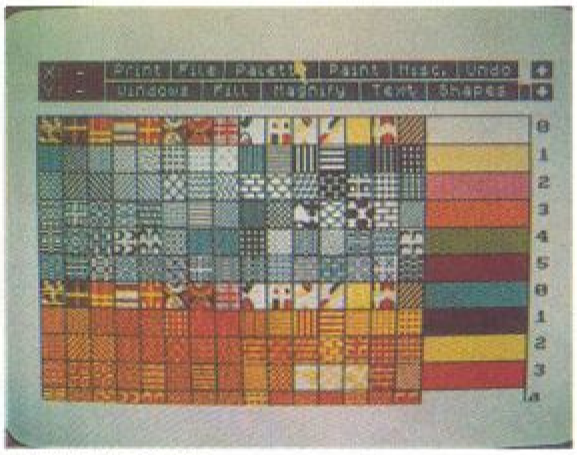
The whole point of using an electronic medium as opposed to dirty old paint and pencils, paper and canvas is to make easy use of the wide range of tools of manipulation that a modern micro can provide.

These make up for the inadequacies of most computer images (low resolution, few available colours) by providing the ability to transform the screen in unique ways. So far the easiest available means of doing this is with an Amiga and *Deluxe Paint II* or *Digipaint* - described in our last issue.

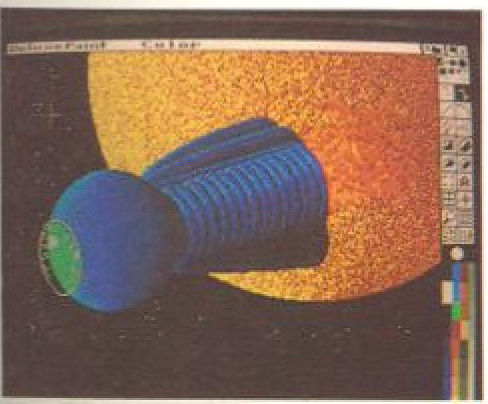
On lesser machines than the Amiga, Rainbird's *Advanced Art Studio* seems best to fit the bill. That is not to say that other programs on some micros cannot do part of what *AAS* can do; just that *AAS* can do more, and more easily, on most machines. It provides what should now be seen as a *de facto* standard or base-line for graphics packages.

Nevertheless, *AAS* is by no means perfect on any machines. Although they would be slower than continental drift on an 8-bitter there is no reason for not including more sophisticated manipulation routines within the program. Who would not give a limb to be able to rotate an object by just a few degrees on some occasion, or bend it, or give it perspective? Most software writers seem to think that speed is essential but, as the long render times required by ray tracing show, sometimes it's worth the wait! The ST version of *AAS* does provide some of these more complex tools working at a reasonable speed plus all the usual facilities, but it seems so very different to the 8 bit versions as to be a different package. A shame the same 'look' could not have been kept to ensure ease of upgrading.

Assuming that its facilities are the minimum norm to demonstrate the more advanced techniques of 'paintbox' style on-screen painting, we will use *AAS* on an Amstrad CPC to produce most of the 8-bit pictures for this series. Each tool will be examined in turn to see what it is capable of, how you can best use it and, in some cases, how it might be improved. Wherever possible the equivalent tool in *Deluxe Paint II* will also be described for comparison, and if a particular machine has some unique ability relative to that tool it will also be covered.



TEXTURE GRID
The full range of textures that the CPC version of Advanced Art Studio provides, using just four colours.



BLUE SPACECRAFT
Sphere - dither-filled circle. Canopy - simple white ellipse with highlights sprayed on. Interior - shape defined by canopy/brush and filled with solid colour. Ribbed body shell - simple brush. The shape of one rib dragged repeatedly to a focus before sphere was pasted, then ribs each placed carefully adjacent. Planet - large dither filled circle. Spacecraft fumes - painted on with Smoothing selected.

Textured fills and dithering

And this week we shall examine textured fills and dithering- the latter being my favourite occupation. On these pages are several pictures of a spacecraft, one drawn in 4 colour mode 1 on CPC, another using 16 colours in *DPaint* on an Amiga, (though it could as easily have been done on an ST) and the other a ray traced 4000 colour picture from *Sculpt 3D* definitely on an Amiga. What's interesting about them is the way that the curved surfaces are rendered in each picture. The two that concern us most are those using only 4 or 16 colours.

Normally the first thing to consider in drawing a picture is structure – the way the parts of an object hang together and fit in with any other surrounding objects. (We shall delve more deeply into structure next month). But in this case the structure is relatively simple; it is the light that is most interesting.

To give the effect of three dimensional space in a picture the position of the light source and the amount of logic that you use in shading the surfaces is vital. The four colour CPC drawing uses the least amount of shading. More could have been used to model the surface but with so few colours this would tend to be messy and complicate the image. Initially the sphere relies on two simple tricks to make it look spherical – curved lines on the surface and a spot of specular reflection in the right place.

Specular reflections

Everything we can see is visible because of the light reflected from it into our eyes. It is a particular colour because the surface absorbs the wavelengths of light of that colour. If the surface is dull then we will see the object in a range of tones of that colour. If it is reflective we will see the surrrounding world including the light source reflected – usually with a lot of distortion – but tinted in its colour. If the object is to some degree shiny the surroundings are not usually reflected but the light source is. This reflection is called specular reflection or highlight. Adding the highlights is the most important final touch you can give to a drawing to make it look realistic. They need to be carefully observed. The shading that has been used is in the form of actual shadows positioned to show that the sphere has bulk that is getting in the way of the light. To position this (and the highlights) correctly it is necessary to decide exactly where the light source is. In deep space there is usually only one major source, making lighting much simpler (which is why this subject was chosen to illustrate light and shading).

When a reasonable number of colours are available – say 16 – it is possible to select those that will give the effect of modelling or 'roundness' to an object. Darker shades are placed away from the highlight, lighter shades close to it, the edges of each colour blended cosily together using a technique called **dithering**. The blue spacecraft picture demonstrates this form of shading perfectly. Some 16 bit software allows automatic dithered fills – the range of colours used is changed progressively along each line of the fill.

The CPC is capable of manual dithering in 10-res mode using the spray. So in theory are the Spectrum and C64, but attribute problems make this difficult in all but the simplest pictures. It is here that *Art Studio* comes to our rescue with **Wash Texture**.

Washing your textures

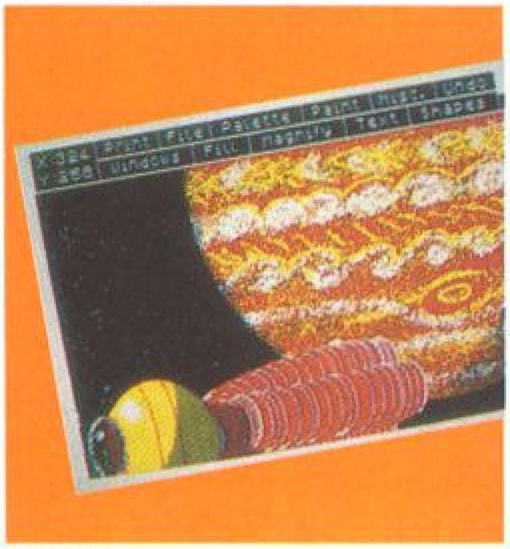
The full range of textures that the CPC version of *AAS* provides using just four colours is shown in the illustration of the Texture Grid. Other versions have a similar range. These can all be used to fill an area of the screen or they can be sprayed, painted or drawn on using any drawing tool in conjunction with Wash Texture. On the right of the grid is a column of larger boxes showing the range of shades that are available from ONE of the textures by swapping the foreground and background colours. All of the 'pseudo-colours' shown can be used on screen at once as only four 'real' colours are used, with the extra hues produced by 'optical mixing'.

Optical mix

Althogh the human eye is an astonishingly sensitive organ the brain has the ability to be selective about the way it interprets what it sees, especially when viewing a fine grid of dots. Provided the dots are small enough the eye can mix two adjacent colours into a third. This is called optical mixing.

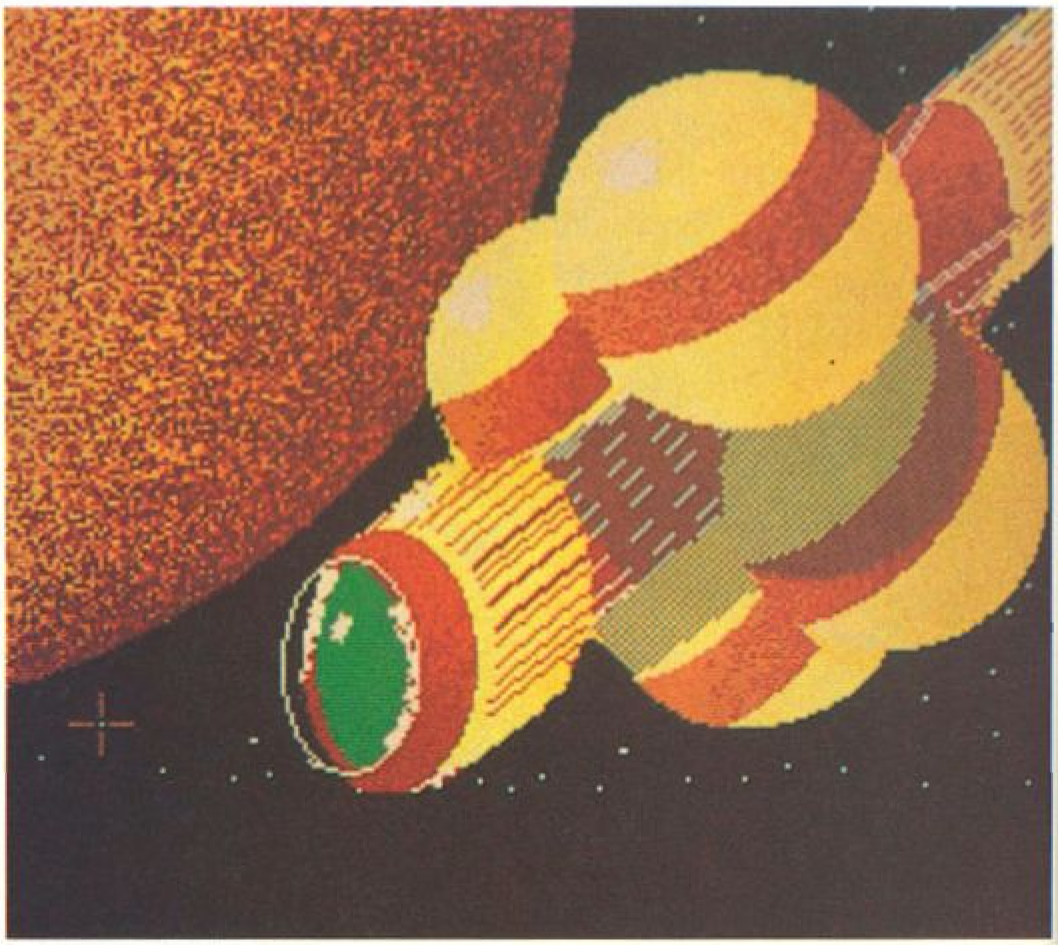
You will find it very useful if you produce a similar grid to help in the selection of textures as the range is so large – and can be greatly enlarged because the textures are user-definable and can be saved. When using the ST version of *AAS* this screen grid could be kept immediately available as a separate screen in memory.

In some ways the most versatile use of textures is as 'spray-on shadows' with Wash Textures. By defining the background colour of a texture as transparent and the foreground colour as the shadow colour, any area that you wish to be in shadow regardless of its colour can be sprayed over and then converted to the defined texture by selecting Wash Texture. All colours show through the transparent bits but the darker grid overlay gives the impression of shadow. This technique is extremely effective and can save lots of time. It works best if the picture background is without detail and the same colour as the shadows, in the case of the CPC picture above, black.



SPACE
Mode 1 (4 colour). Made in parts (windows) and later assembled. Body – short cylinder dragged along curved path with multiple path with multiple repeat. Superimposed three times. Sphere – filled circle with sprayed highlight. Shadows – sprayed on as Wash Texture.

Amazingly, *Deluxe Paint II* does not have a wash textures facility, the only serious omission in the program. But a similar effect can be obtained by defining a fill pattern in alternative background and shadow areas with any colour, filling with the defined texture, picking up the textured area, freeing the background and pasting



YELLOW SPACECRAFT
Each section was made separately and later assembled. An angle of approx 45 degrees was chosen to minimise aliasing problems. Cylindrical body – short elliptical section with white edge and a few white spots to give bands. Dragged at 45 degrees and dither-filled. Reduced to make central stem. Fuel Spheres – dither filled circles. How the craft was assembled: Most distant two spheres...central stem...lower close sphere...rear body...shading...nearest sphere...front body.

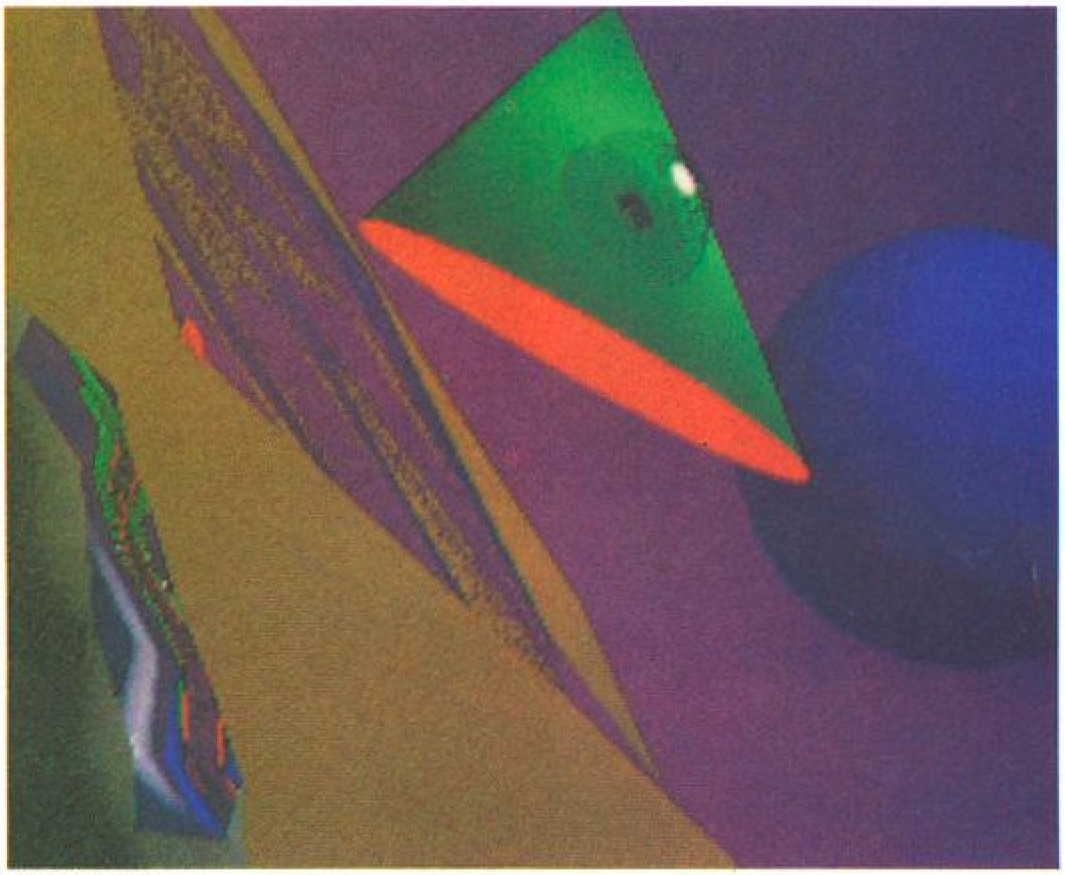
the texture. It's a bit elaborate, but it works – as can be seen in the Yellow Spacecraft picture.

Colours

Such a strategy is only necessary when the number of colours available is limited. With 16 or 32 chosen from a range of 512 or 4096 more realistic shading and surace modelling can be achieved with careful choice of colour and dithering. The most sophisticated software even lets the artist spray on the shadows by calculating the next darker shade available for each pixel in the shadowed area.

With *Digipaint* using 4000 colours on screen this can result in some very realistic effects. Similar results are produced from ray-traced pictures. Examine the shading and colour modelling of curved surfaces in the picture 'Blue Moon'. This degree of smoothness is not possible in any other way; it probably represents the ultimate in surface modelling on a current home computer – a suitable image to leave you contemplating the next month. In true *Masters of the Universe* fashion the moral this month is:-

"...if you are going to get up to shady practies make sure you wash textures". ●



BLUEMOON
Ray Traced *Sculpt 3D* Picture.

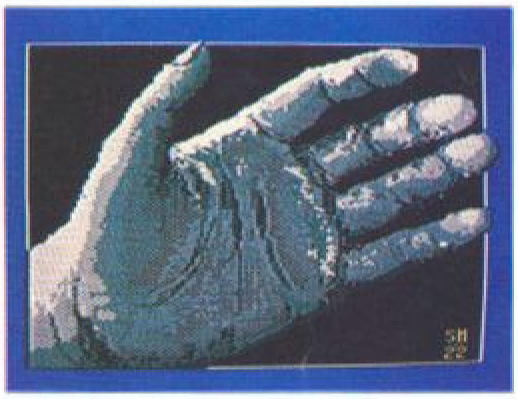
ARTWORKS

It's here at last! The section you've all been waiting for, where you can display to the rest of the graphics world the work you've created.

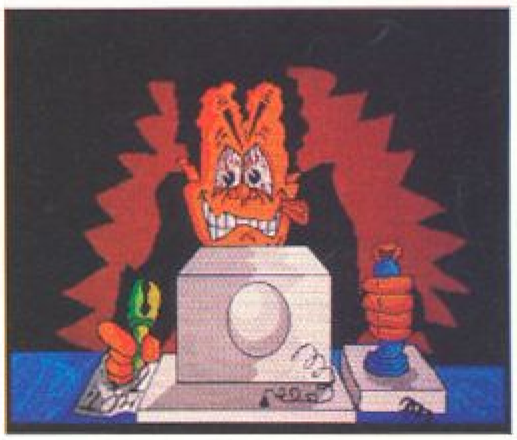
***Artworks* will appear in every second or third issues of ACE – provided, of course, that you keep on sending the pictures in. Please try to give a few details about how you did them, as well as any tips you might have for other readers. The address to write to is:**

Artworks
ACE
4, Queen Street
Bath
BA1 1EJ

HAND
Steve Hall, London
Drawn freehand on the C64 using Artist 64.



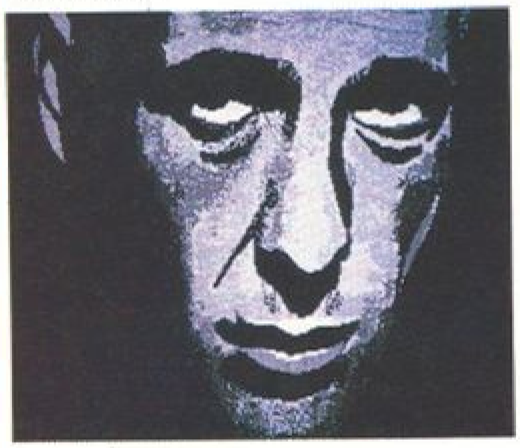
CARTOON
Ronnie Tucker
This version of a cartoon by ACE's own Steve Spicer was drawn on the ST using Neochrome.



HUMPHREY BOGART

Patrick Kerr, Lanarkshire

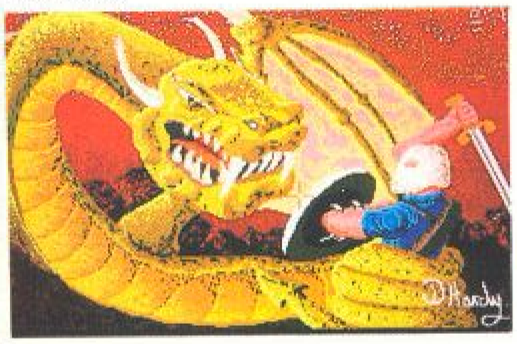
The great movie actor makes a return appearance on the ST.

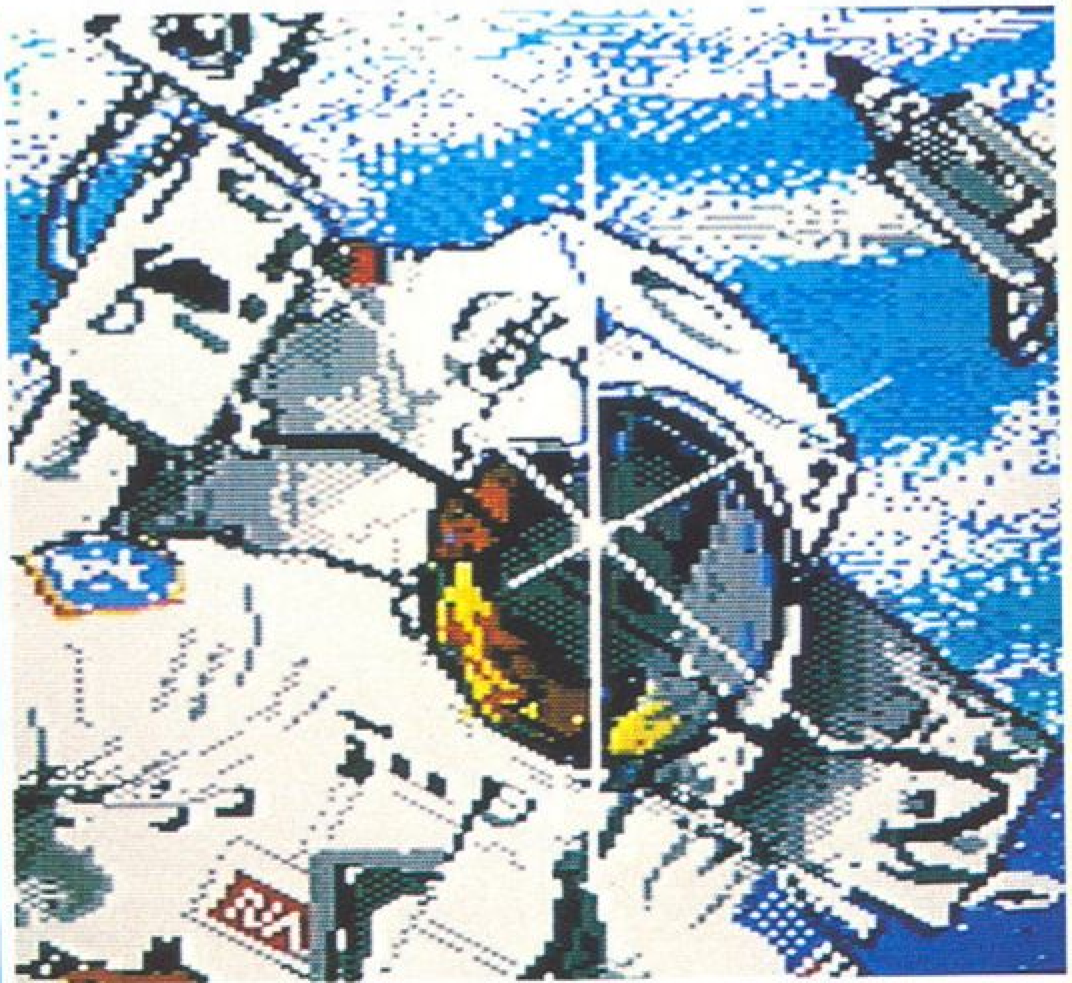


DRAGONSLAYER

David Hardy, Nottingham

Drawn on the Amiga, using Deluxe Paint. Not bad at all for someone who's only had the computer for a month.

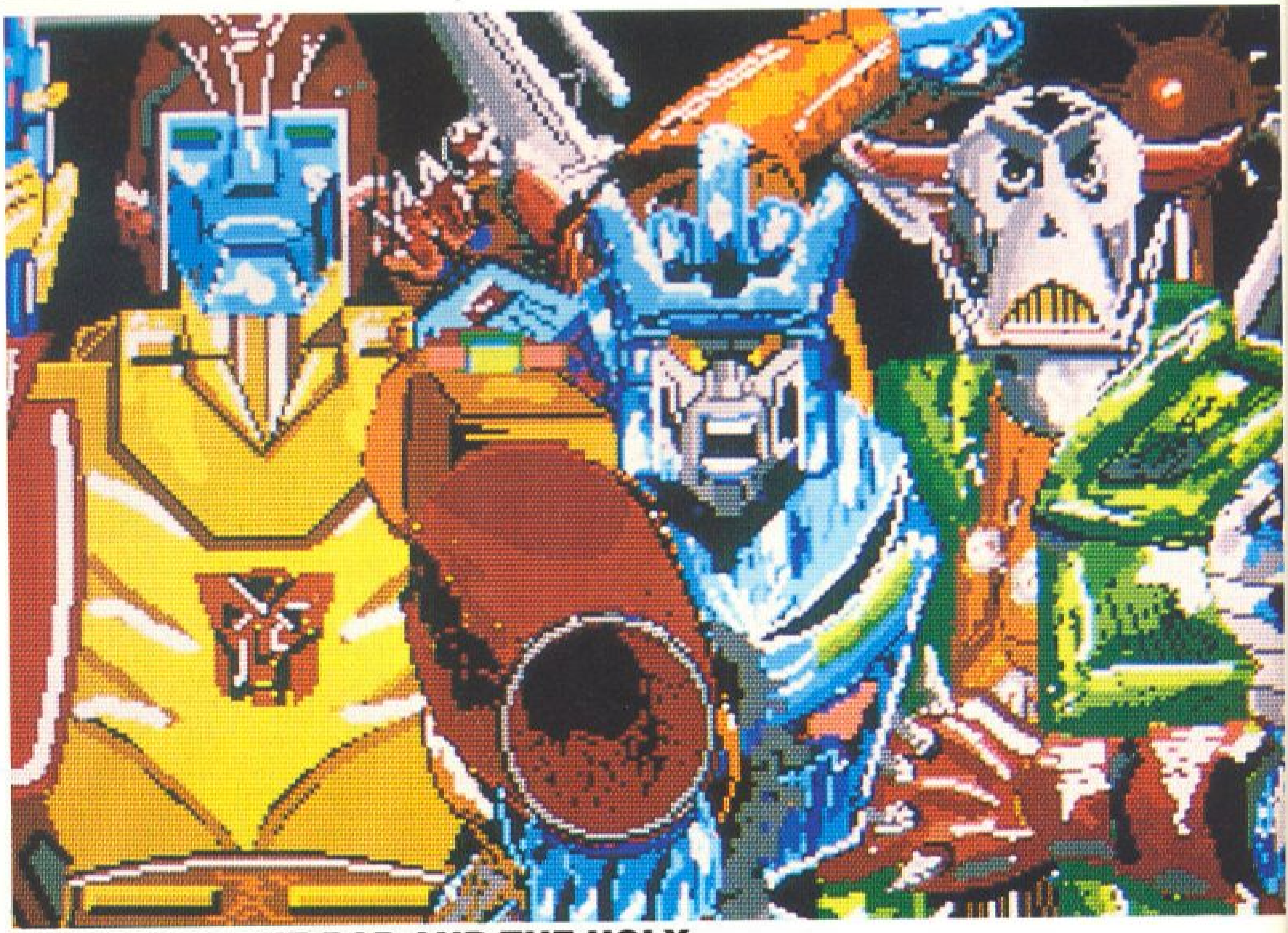




SPACEMAN

Steve Hall, London

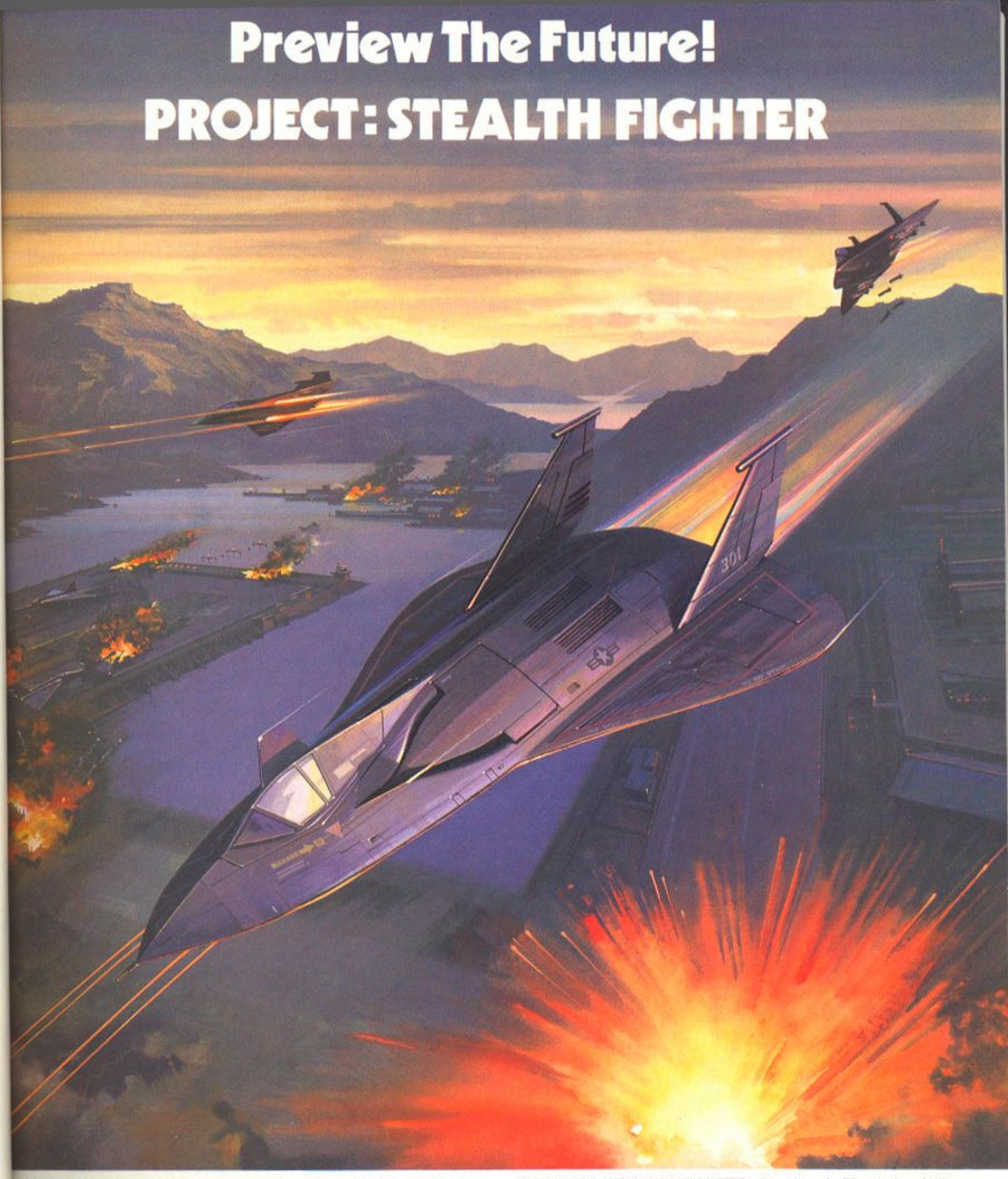
Another of Steve's detailed pics, produced once again with Artist 64 on the C64.



THE GOOD, THE BAD AND THE UGLY

Frank Tout, Torquay

Produced on an Amiga using Deluxe Paint. Single items were created, picked up with brushes, saved and then overlayed.



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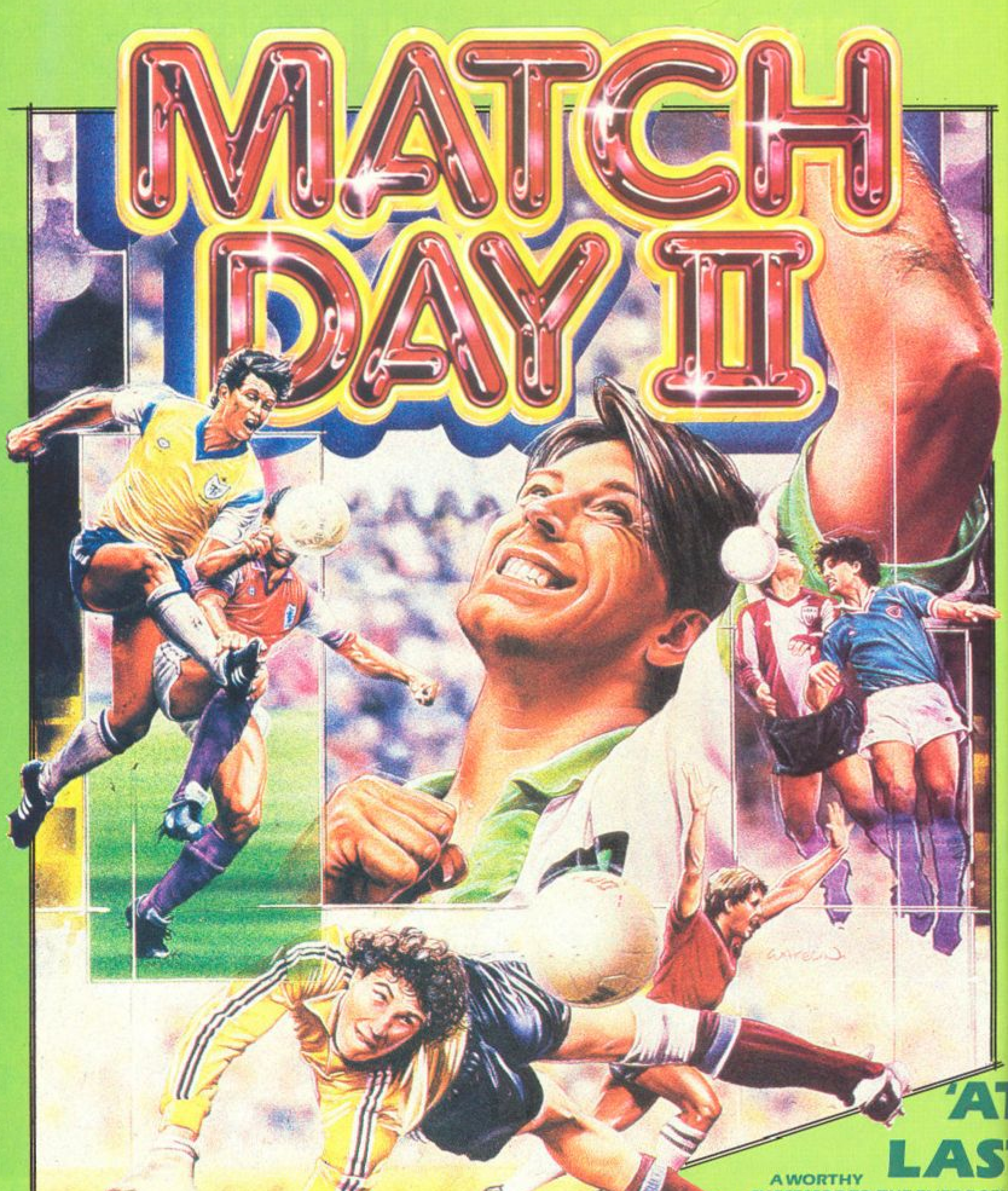

'AT
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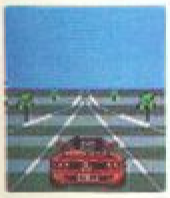
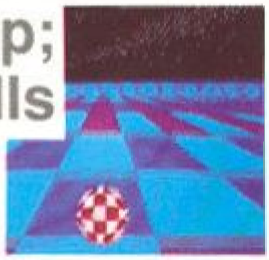
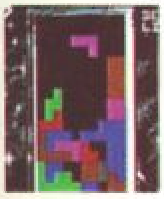
SCREEN TEST



Road racing games have gone in to overdrive this month; we give the head-to-head judgement on *Out Run* and *Super Hang On*. In a slightly different vein, EA want to take you for a *Test Drive* in some very upmarket motors..

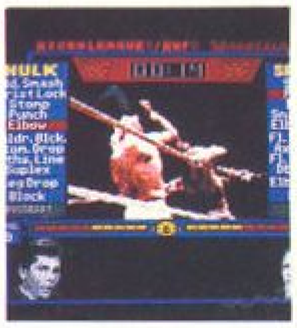


Old favourites have been jazzed up; check out bouncing balls in Gremlin's *Cosmic Causeway* and Ocean's *Match Day 2*.



Most surprising 900+ programs of this month are the board game *Diplomacy* and the Mirrorsoft puzzler *Tetris* (first Russian game that we've ever seen – keep 'em coming Ivan).

And, of course, the arcades. Some good conversions this month, including Konami's *Salamander*, Firebird's *Flying Shark*, Ocean's *Gryzor* and *Combat School*.



Most long-awaited game award goes to *Star Trek*; yes, it really has beamed down this time. Also interesting is *Microleague Wrestling*, with nifty digitised pics of the monstrous grappler Hulk Hogan. Eat your heart out, Big Daddy.

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OUTRUN

Pedal to the metal with US GOLD.

AS long-awaited games go, the software-buying world really has been holding its breath over this one. Did US Gold seriously intend to shoehorn such an enormous, mind-snappingly fast game into a bunch of home micros? More to the point, could they do it?

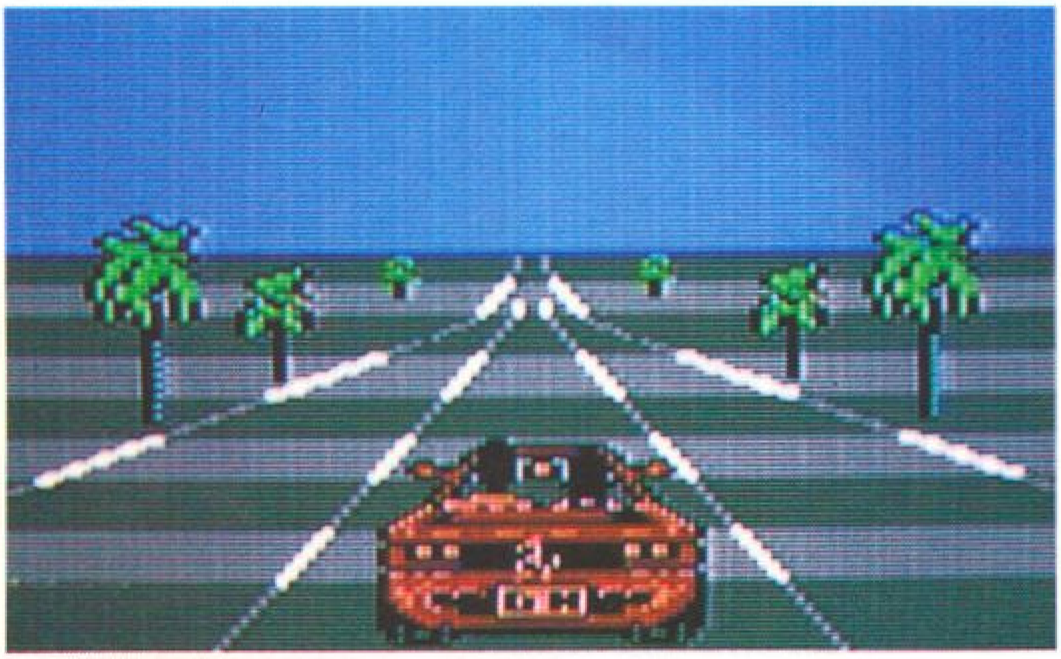
Not so much clearing the first hurdle as limbo-dancing under it, 8-bit versions of the game just squeaked onto the market in time for Xmas. The only finished version available for review at time of going to press was for the C64, but US Gold were confident of getting Spectrum and Amstrad versions into Santa's grotto too.

If you were at the PCW show this year, bought a copy of ACE issue 2 or just took a look in the arcades recently you'll already know what *Out Run* is all about, but for anybody who's still in the dark here's a quick rundown.

You have to drive a bright red Ferrari from a start to one of five finishing lines, cornering at high speed and dodging other vehicles you come across. You drive against the clock, with time bonuses along the way to extend your game. Run the clock down to zero, by driving too slow or wasting time recovering from crashes, and it's game over.

That's all standard-ish coin-op racing game stuff, but a number of features lift the arcade *Out Run* into a class of its own. On the graphic side, large (and frighteningly solid) pieces of roadside scenery hurtle past very convincingly: hit these and your car will go tumbling end over end in one of the game world's all time great crash sequences. If gameplay is more your cup of tea you'll find the coin-op's got bags of that too, what with cornering – take it slow and lose time accelerating, or grit your teeth and steer – and navigation.

This latter is possibly the coin-op's strongest point: the junctions just before each time checkpoint let you choose not only which finishing line to go for but also the route you want to take there. This surely is the heart of the *Out Run* experience. C64 race strategy fans will be disappointed to learn then that their version has no navigation in it at all. You must choose one of five possible routes (compared to the coin-op's six-



Stage One – Coconut Beach – is common to all routes, so you'll soon know its curves inside out.

RELEASE BOX

C64/128	£9.99cs, £11.99dk	OUT NOW
SPEC	£8.99cs	IMMINENT
ATARI ST	£19.99dk	IMMINENT
AMS	£9.99cs, £14.99dk	IMMINENT

Sega Beavers

Superficially these two coin-op licenses have a great deal in common, both in the Sega originals they're based on and in the compromises made during conversion. If anything these games are more similar to each other than the originals were, what with the C64's memory problems killing off the route choices that made *Out Run* so popular in the arcades.

Oddly enough, the main problems the two games have aren't those that most pundits foresaw. While the crash sequences in *Out Run* haven't turned out to be terribly impressive, the large roadside features and highway traffic are surprisingly fast and the impression of speed is good.

Equally, the notorious colour problems of the Spectrum have done relatively little to spoil the look of *Super Hang-On*. True, the turbo glow is nothing to write home about, but the lack of painful colour clash is a delight and again the sensation of speed comes across well. (The Amstrad on the other hand, a far more colourful machine, is given as drab a game display as the Spectrum ever had to put up with.)

Ironically, both games suffer from gameplay problems which could put you off more than a little. *Super Hang-On*'s initial difficulty is infuriating, but as so often happens the frustration goes hand in hand with addiction. *Out Run* has its difficulty problems too of course, but verging on the insultingly easy as it does it'll have a rather harder job pulling through.

TIRED of always hitting top speed and still not going fast enough? So were Sega apparently, because they fitted the *Hang-On* bike with a turbocharger for just such moments. The result was the rip-roaring coin-op that ED's new transworld road-racer is based on.

Starting in Africa you aim to race around the globe, taking in Asia, America and finally Europe in a desperate bid to beat the clock. Bonus time at the end of each section – there are 48 of these in all – helps keep you going, but the odds are stacked against you.

As with C64 *Out Run*, this is not one game but several. Each of the four continents loads separately, and even on Amstrad disk you'll have to switch the machine off to move on to the next one. In

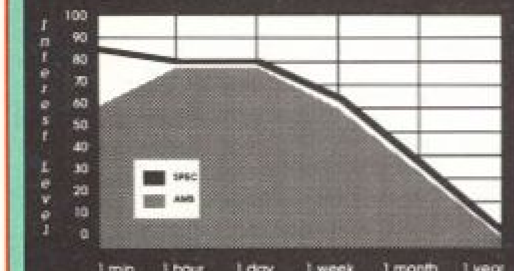
Amstrad Version

Astonishingly the game actually *lost* colour on its way over from the Spectrum, leaving the screen drab and largely monochrome. The sound too has travelled badly. A poor conversion indeed that does nobody any credit.

GRAPHICS	5	IQ FACTOR	2
AUDIO	1	FUN FACTOR	8

ACE RATING 672

PREDICTED INTEREST CURVE



Better graphics on the Spectrum give it the edge on day one, but both versions suffer from excess difficulty in the long term.

C64 Version

A good impression of speed and some excitingly chunky roadside features may be fine technical achievements, but they can't paper over gaping cracks in the gameplay. Without junctions, tight corners, roadsigns or realistic acceleration it's hard to call this *Out Run* at all.

GRAPHICS	8	IQ FACTOR	2
AUDIO	8	FUN FACTOR	6

ACE RATING 610

teen) at load time, and if your fancy turns to a different route after half an hour you'll have to turn off and reload from scratch.

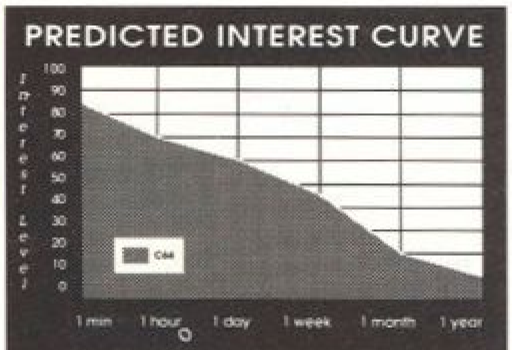
That's not the only major departure from the coin-op: the balance of gameplay is completely different too. The C64 Ferrari has such phenomenal acceleration that brief periods of braking have very little effect on your overall time, so what with the absence of any really sharp corners there's no real need to risk crashing even on sections you aren't familiar with. This is all the more remarkable seeing as the C64 version has neither the wide stretches of carriageway nor the roadsigns of the coin-op.

Instead your main problem is weaving through traffic, but even here there's relatively little challenge. The sheer volume of traffic is absurd – finding your way completely blocked is not uncommon – but since all vehicle patterns are fixed and learnable you'll soon be avoiding any collisions it's actually possible to avoid. Mastering any one of the five courses is a matter of hours rather than days under the circumstances, and that's not good enough.

The ball may still be in the air on the Spectrum and Amstrad, but the C64 version is definitely disappointing. Though superficially not too far off the coin-op – Play School houses and dodgy bridgework to one side – it lacks the playability and challenge you're entitled to expect. As a game in its own right it's just too easy getting through the stages to hold your interest for any length of time, so US Gold lose both ways.

● Andy Wilton

PREDICTED INTEREST CURVE



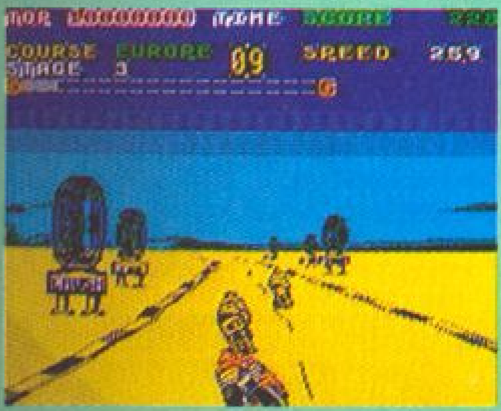
Surprising good looks will grab you at first, but the game's too easy to hold your attention.

SUPER HANG-ON

Get a grip on ELECTRIC DREAMS.

theory the continents are graded in order with Africa the easiest and Europe the hardest, but in practice this is only halfway the case.

You start each continent with 50 seconds on the clock and get another 30 seconds bonus at the end of each section. You'll rarely make a 'profit' on a section by completing it in under 30 seconds, so your time will tend to get worn down as you progress across a continent. Thus, in a sense, the 18-section European route is much harder to complete than Africa (6 sections) or Asia (10). The opening sections of the African run are at least as hard as anything in Europe or America however, and the first leg on the Asian route is nothing short of diabolical. The moral is unclear, but don't feel obliged to follow the 'obvious' order.



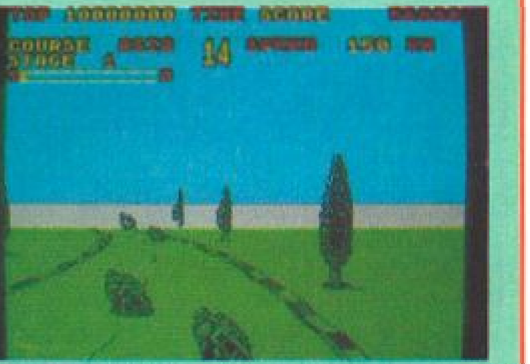
Spectrum: Blazing across America, you'll have to weave through the pack. The course indicator (top left) shows your progress along the course, with the line-breaks marking check-points.

As well as the usual steering, throttle and brake you have a key (fire button for joystick diehards) which engages that all important turbo – provided you're going fast enough, that is. You can press for all you're worth, but the turbo won't kick in until you're up to 280kph. When it finally does fire up however, things really start getting interesting. The extra 40-50kph the turbo gives you is essential if you're to stay on schedule, but it makes it substantially harder staying on the road and dodging other riders.

Keeping your tyres on the tarmac is pretty important – hitting roadside obstacles costs you precious seconds – but dodging other riders is absolutely vital. Collisions can cut your speed in half, and that'll lose you a good deal more than that turbo assist. Unlike *Out Run*, you see, the opposition come from behind as well as appearing in the distance. Once you fall below the average speed of the pack you're liable to be rammed by bikers trying to overtake you.

It's a vicious circle: lose speed and you may never get back again, being rammed faster than you can steer or accelerate. Ramming can just keep cutting you back to a crawl, but it can also block you from getting the line you need round a curve or run you off the road entirely. If you suffer from blood pressure problems, the colossal frustration involved here will do you no good at all. It's not just the crass unfairness of it all – no matter who rams who, you're the only one who loses speed – but the extreme difficulty of avoiding collision as well. Without a rear view mirror, you've just got to guess where riders will appear from. Get it wrong once and it could put you out of the race. Addictive stuff to be sure, but you'll be using the abort facility – and a few well-chosen expletives – more than a game ought to require.

● Andy Wilton



Amstrad: A drab-looking Asia, with some nasty curves to handle early on.

RELEASE BOX

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AMS	£9.99cs, £14.99dk	OUT NOW
ATARI ST	To be announced	SPRING '88

Spectrum Version

Great impression of speed, well-animated riders and good colour with remarkably little clash. Sound effects are on the weak side, but overall it's solid stuff on the presentation front.

GRAPHICS	8	IQ FACTOR	2
AUDIO	4	FUN FACTOR	8

ACE RATING 752

FIRETRAP

Douse flames with ELECTRIC DREAMS

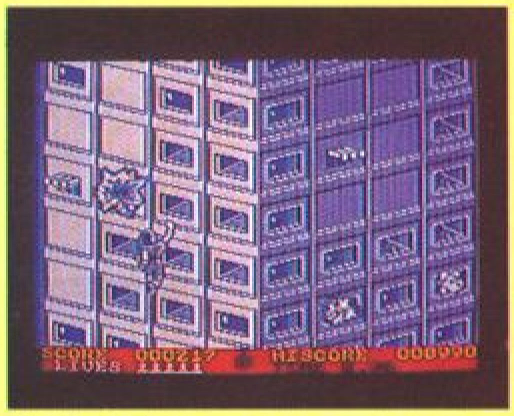
FIRE fighting is best left to the experts, especially when there are five tower blocks ablaze. Still, all the experts are exhausted so it's up to you to save the day.

You start the game on the bottom corner of the first tower block and have to reach the top of the building within a time limit. Fires break out from the windows constantly and you have to use your water cannon (strapped to your back) to extinguish them. The trapped people (and dogs) need saving as well and this is achieved by reaching whatever window they happen to be hanging out of. They then parachute to safety and you can go rescue the next victim.

RELEASE BOX

C64/128	£9.99cs, £12.99dk	IMMINENT
SPEC	£9.99cs,	OUT NOW
AMS	£9.99cs, £14.99dk	IMMINENT

But playing saviour for everyone is a secondary consideration, for at the top of the buiding is a special lady. Rescue her and you can proceed to the next building irrespective of how many others you've saved on the way. As is usual with burning buildings, the rescue operation is hampered by falling televisions, tables, bottles of poison – the usual sort of thing, and contact with any item (including the fires) results in you losing one of your five lives.



You're facing death every second here, so perhaps you should seek shelter under those flagpoles.

FireTrap suffers in the playability stakes in that once you've fired your cannon your man can't move until the shot has disappeared off screen or has hit something. It's not the most compelling of coin-op conversions and all but the hardened addicts will soon tire of this.

● Andy Smith

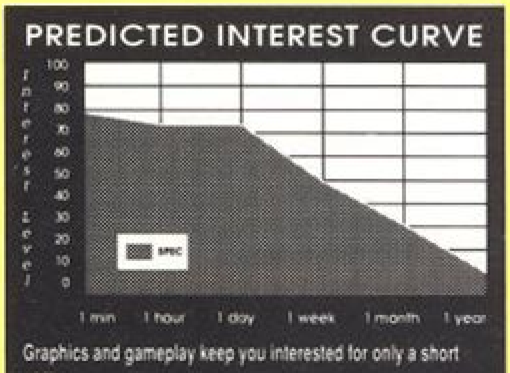
SpectrumVersion

The scrolling is jerky and the screen isn't very colourful, though the colours do change for each building. It's tough to play , and you may feel a bit cheated when you get hit by an object coming out of a window. More luck than brainwork is needed and the addiction wears off pretty soon.

GRAPHICS	8	IQ FACTOR	2
AUDIO	4	FUN FACTOR	6

ACE RATING 647

PREDICTED INTEREST CURVE



Graphics and gameplay keep you interested for only a short while

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MASK 2

More Venom from GREMLIN

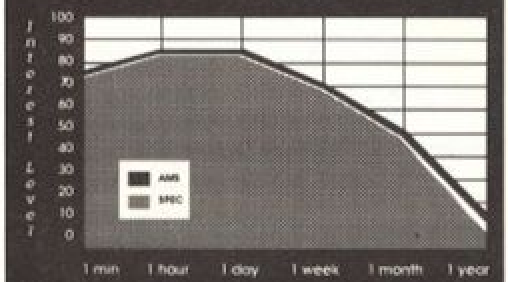
BOULDER Hill, the home of do-gooders M.A.S.K. is the starting point for another attack against do-badders V.E.N.O.M. That Vicious, Evil, Network Of Mayhem have upset everybody by kidnapping the president and it's down to you to save him.

The game is played over a right-to-left scrolling terrain (full of flying, crawling, swimming and driving VENOM agents) with the player controlling one of three MASK vehicles. Initially the player has to make his choice of vehicle from a selection of five possibles. Each one has peculiar characteristics which have to be considered before selection e.g. Thunderhawk (car) can transform into an airborne attack craft at will, whereas Gator turns into a high speed power boat on contact with water. Switching between vehicles is easily achieved at the press of a key, and is necessary in order to complete the three different missions in the game.

If you're a fan of the toys, or you enjoyed the first MASK game, then you will find *MASKII* just as much fun.

● Andy Smith

PREDICTED INTEREST CURVE



The CPC graphics are slightly superior, as is the gameplay, but here's a lot of fun to be had from both versiions.

Amstrad Version

Sprites are cumbersome and have a blocky look, but they are colourful. Plays well, with plenty of speed and just as much fun as on the Spectrum.

GRAPHICS	7	IQ FACTOR	3
AUDIO	5	FUN FACTOR	8

ACE RATING 813

SpectrumVersion

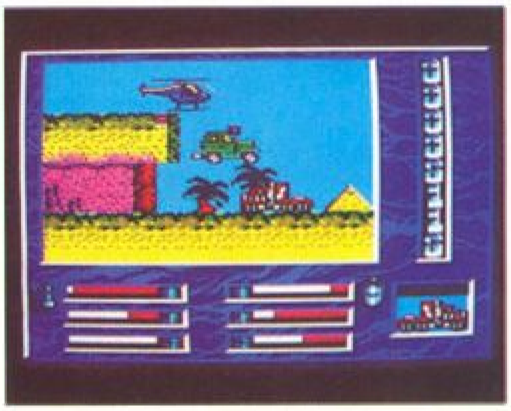
Large sprites across colourful backgrounds make this a goddlokking game. It's straightforward blasting good fun that won't overtax the brain and is a worthy successor to the original.

GRAPHICS	7	IQ FACTOR	3
AUDIO	5	FUN FACTOR	8

ACE RATING 813

RELEASE BOX

C64/128	£9.99cs, £14.99dk	IMMINENT
SPEC	£7.99cs	OUT NOW
AMS	£9.99cs, £14.99dk	IMMINENT
MSX	£7.99cs,	IMMINENT



Amstrad version - That's you in *Rhino* - just what you need for smashing through boulders.

DAN DARE II

Can VIRGIN do it again?

GREAT Scott, Digby! The Mekon's up to his old tricks again. He's poised to unleash his dreaded Supertreens on Earth in this new Gang of Five epic, with only the Pilot of the Future to stop his fiendish schemes. Can you don Dan's spacesuit and save the day?

On each of the game's four side-on view levels, your mission as Dan is to kill the Supertreens by wrecking their life-support capsules. It's a tall order, quite aside from the amount of jetbike-assisted exploration each level calls for. The main enemy is time: as soon as you start blasting Supertree's you trigger a destruct sequence which will blow the entire level apart. Blast all the remaining capsules and reach the airlock to the next level before the countdown reaches zero, and you'll survive for another round of tougher exploration and wrecking: take too long and it's game over.

Amstrad Version

Terrific Gang of Five colours make this a real treat to look at, and carefully drawn graphics capture the original comic-strip's feel precisely.

GRAPHICS	9	IQ FACTOR	5
AUDIO	6	FUN FACTOR	9

ACE RATING 838

Spectrum Version

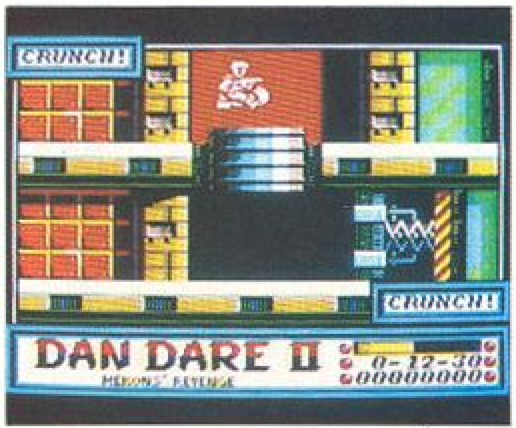
Bright bold clash-free colours make this a great-looking game, but tough controls will cause you some problems at first.

GRAPHICS	8	IQ FACTOR	5
AUDIO	5	FUN FACTOR	9

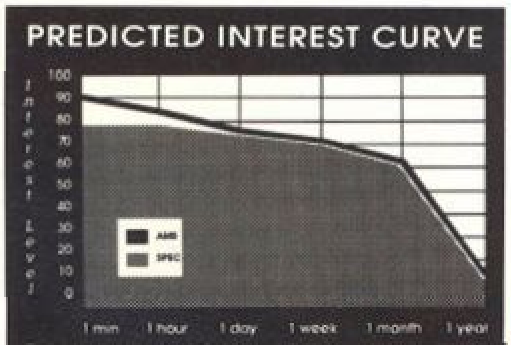
ACE RATING 814

RELEASE BOX

C64/128	£9.95cs, £12.95dk	IMMINENT
SPEC	£7.95cs, £14.95dk	OUT NOW
AMS	£8.95cs, £14.95dk	OUT NOW



Spectrum: Get too close to that tunnel mouth and you'll be sucked-down into the garbage compactor below. Nasty!



The game probably won't last you a month as Dan, but there's still the Mekon mission to tackle.

But there's plenty to stop you: forcefields block your path, airborne Treens blast away at you and tunnels suck you off course (possibly to your doom). Gun turrets, giant garbage compactors and conveyors also cause problems. Most hazards sap your stamina level – when this reaches zero your dead – but things like compactors lose you one of your six lives straight off.

Sick of being Mr Nice Guy? Want a tougher challenge? Then play the Mekon instead! Dan's already triggered the destruct sequence, the idea goes, so you've got no time for exploration or mistakes. Dash round, switch all the Supertreen capsules on and then get in that airlock before the level blows. Manage that and the next level's timer starts immediately, so you really have to know your way round.

● Andy Wilton

PSYCHO SOLDIER

Athena again? IMAGINE!

HAVING escaped the clutches of the Dark Overlord, Athena once more plays lead sprite in this sequel to Imagine's game of the same name. Again it's a licensed coin-op conversion which sees the player controlling Athena as she battles through six levels of scrolling platform shoot-em-up.

Spectrum Version

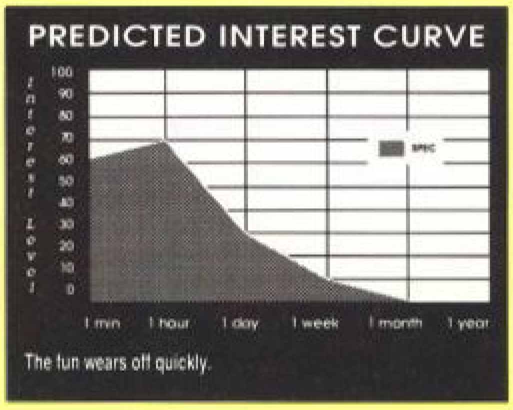
This 128K program (multi-load in 48K mode) has well-animated colourful graphics but these cannot gloss over the tediousness of the game. It's no fun to play and has few if any addictive qualities. The frequent death problem that marred *Athena* has been solved, true, but only by creating a game with minimum action.

GRAPHICS	7	IQ FACTOR	3
AUDIO	4	FUN FACTOR	3

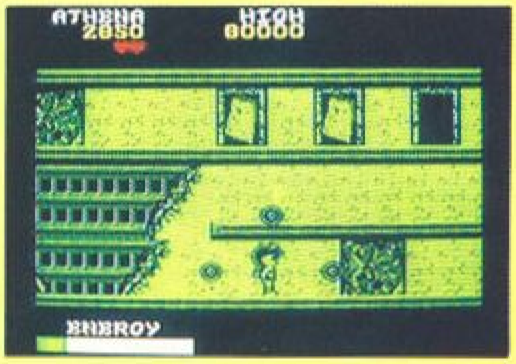
ACE RATING 505

Armed with a front-firing gun and four bombs that float around her, Athena must make it to the end of each level's 30 screens that continually scroll from right to left. The levels are infested with demons, contact with whom costs Athena one of her four lives.

At the base of the screen is displayed an energy bar and red icons showing how many bombs she has left. The energy bar relates to the strength of the bombs and at various places throughout the levels extra bombs and energy can be gained by destroying large bricks. These bricks also hide some unpleasant icons that drain energy on contact, so you have to be careful to avoid these. Make it to the end of the level and you'll find a building guarded by a monster that has to be destroyed by a combination of bombs and laser fire – if you lose a life, you also lose any bombs and energy you picked up on the way, making life difficult if you happen to come up against the monster with only your laser.



The fun wears off quickly.



Psycho Soldier may have been an addictive and playable coin-op, but as a computer game it soon becomes tedious and boring to play.

● Andy Smith

RELEASE BOX

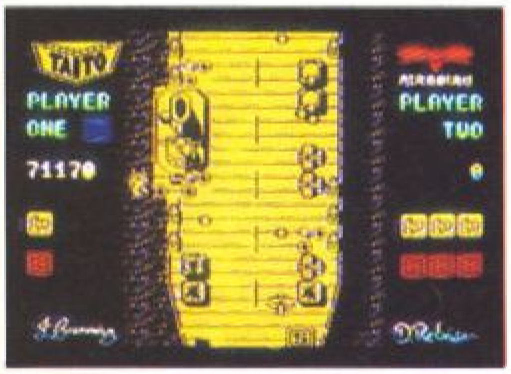
C64/128	£8.95cs, £12.95dk	IMMINENT
AMS	£8.95cs, £14.95dk	IMMINENT
SPEC 48k	£7.95cs	OUT NOW
SPEC +3	£14.95dk	IMMINENT

FLYING SHARK

Is it a FIREBIRD? No, it's a bi-plane...

BI-PLANES are not exactly state-of-the-art aerial fighting machines and certainly not the obvious choice for combat against the overwhelming odds found in Firebird's second coin-op conversion *Flying Shark*.

It's a vertically scrolling shoot-em up in which you must fly your trusty if ancient bi-plane through five levels of continual bombardment from other aeroplanes as well as tanks and boats. Every so often some beefier opponents will loom up behind you and you must destroy these before they reach the top of the screen, otherwise they go into 'berserker' mode and really give you what-for.



Tally-ho! Biggles never had it this tough – but then Biggles never starred in a Firebird coin-op conversion. You're half-way through the second level, over-flying an aircraft carrier, which has plenty of death-dealing hardware to welcome you with.

RELEASE BOX

C64/128	£8.95cs, £12.95dk	IMMINENT
SPEC	£7.95cs	OUT NOW
AMS	£8.95cs, £14.95dk	DEC/JAN 88

The enemy attack in waves and as you're only armed with a front firing gun, their sheer numbers can prove overwhelming. Never give up hope though because extra firepower is available if you manage to shoot a wave of aeroplanes and catch the resulting flashing square. Manage this twice and your firepower is increased threefold making your job slightly easier. You also have three smart bombs (initially) but you have to go easy on these if you want to survive to the end of the level.

Alternatively, at the end of a wave, you may be lucky enough to grab an extra thousand points, or even a bonus life to add to the three you start off with.

SpectrumVersion

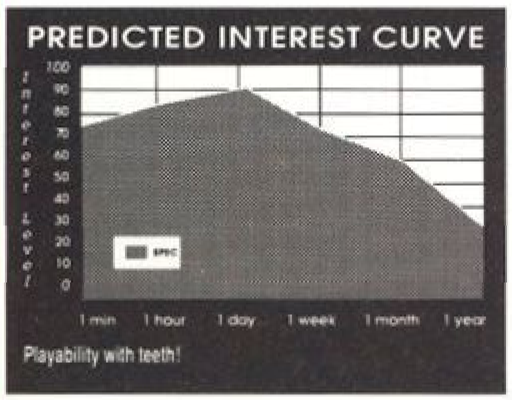
With so much ground detail it can be a little difficult to see the enemies bullets – sometimes you're left wondering what hit you. Sound is limited to spot effects (naff) and the odd tune (good) but that doesn't detract from the games sheer playability.

GRAPHICS	8	IQ FACTOR	4
AUDIO	6	FUN FACTOR	8

ACE RATING 893

Take some elements from *Moonstrike*, throw in a bit of *1942*, add a pinch of *Lightforce* and you'll have some idea of *Flying Shark* – incredibly frustrating, playable and addictive.

● Andy Smith



Playability with teeth!

SALAMANDER

KONAMI'S flying lizard

CYNICS thought *Salamander* was one of those high class arcade games that could never be converted to an 8 bit micro and retain any of the gameplay and addiction of the coin-op classic. Were they right?

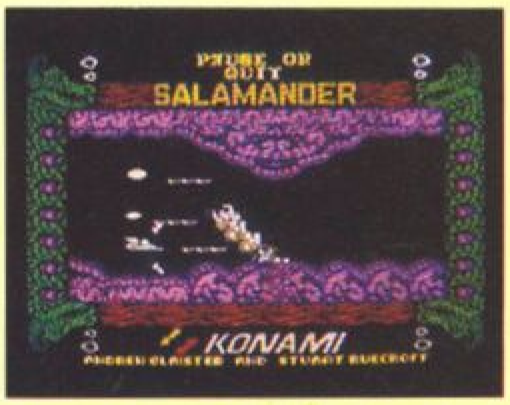
Far from it – *Salamander* has made the transition and has survived admirably. In case you've missed out, this horizontally scrolling shoot-em up has the player flying a space ship through a series of alien tunnels, trying to survive bombardment from both ground-based and flying installations. Huge tentacles burst from the ceilings and floors of the tunnels and try to grab your ship – these have to be shot in the right place to destroy them.

SpectrumVersion

Though the tunnel walls are well drawn and colourful the installations etc are all in monochrome. Sound effects are O.K. but nothing to write home about. The game's playability and addictive qualities will keep you coming back for a long time to come.

GRAPHICS	8	IQ FACTOR	4
AUDIO	6	FUN FACTOR	8

ACE RATING 881



Salamander: You've picked up two 'multiples' which should increase your chances of hitting those tentacles in the right place.

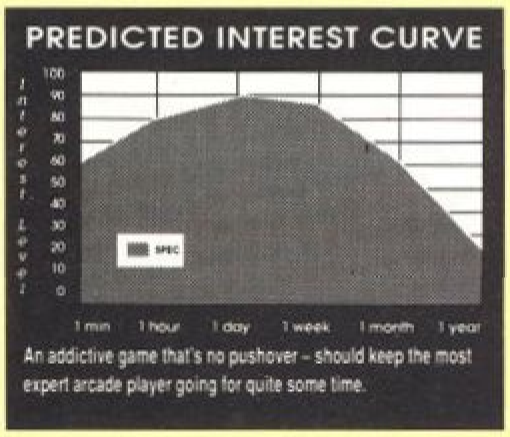
The almost obligatory extra weapons are available to the player who manages to shoot a wave of the flying aliens and these weapons include the legendary Multiples – egg shaped structures that follow your craft and fire when you fire, effectively increasing and spreading your firepower. You get three lives to do the business , and if you're lucky you might pick up a few missiles and lasers to help you on your way.

The first re-start position is well into the game and until you've mastered the first few obstacles, you'll find being sent back to the beginning extremely frustrating. If you like your shoot-em-ups tough, you'll not be disappointed with *Salamander*, it's very easy to pick up and play and incredibly difficult to master. The Konami coin-op conversion team have proved the sceptics wrong wonderfully.

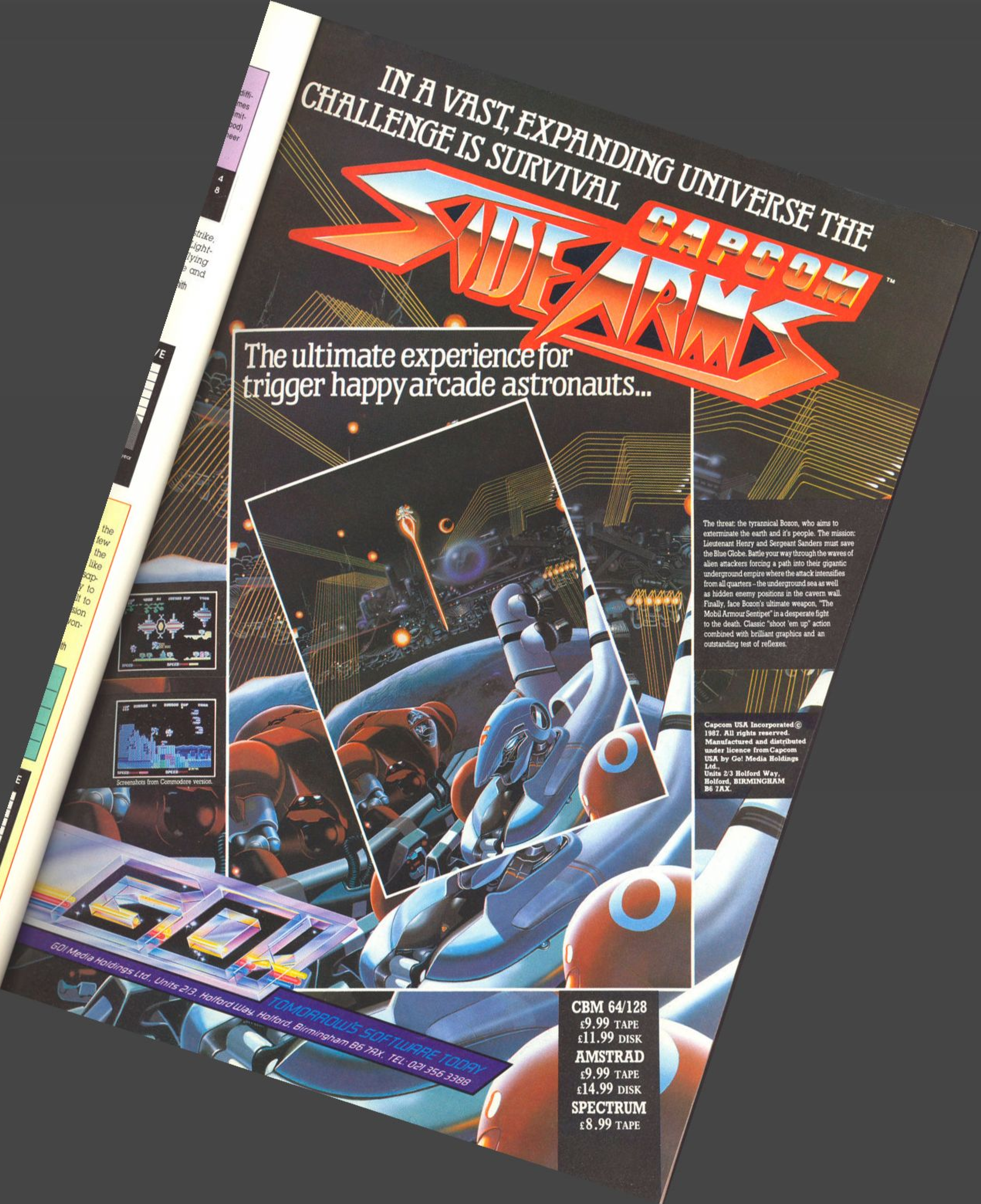
● Andy Smith

RELEASE BOX

C64/128	£8.95cs, £14.95dk	JAN 88
SPEC	£7.95cs	OUT NOW
AMS	£8.95cs, £14.95dk	DEC 87



An addictive game that's no pushover – should keep the most expert arcade player going for quite some time.



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Screenshots from Commodore version.

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TOMORROW'S SOFTWARE TODAY

RAMPAGE

ACTIVISION'S smash-grab-n-guzzler

SMASH and grab raids take on a whole new meaning when you're a fifty-foot lizard, smashing up cities and grabbing people or anything else edible. If you think lizards are only good as handbags you can be a wild and hairy gorilla or an equally wild and hairy wolfman.

These monster creations from Japanese B-movies are in fact mild mannered humans who have had one too many E additives and decided to end civilisation as we know it. Far from trying to stop them with a packet of chewy sweets, Chuck, you are in fact one of the monsters, having a whale of a time beating seven colours of rubble out of any building, vehicle or human you can find.

All three artificially preserved, coloured and flavoured beasts can be under player control, making this the first simultaneous three player arcade game on a home micro. If less than three play the computer takes control of the other monsters, but is less than helpful.

There are 150 different city screens to go rampaging through. In each the task is the same. You climb up the sides of the buildings and knock big holes in them until they collapse. While you're up there you can punch all around you, making a mess of everything nearby. You need to jump off buildings before they collpase, otherwise you'll do yourself harm when it falls.

The authorities – who aren't going to stand by and watch you party – send helicopters, tanks, cars and snipers to mess up your fun. They can all inflict damage but are

C64 Version

The monsters are well animated and colourful, and the buildings have plenty of detail. The title music and sound effects are also slick and attractive. Initially control can be tricky and it's quite difficult to survive for long when playing a one player game. A classy conversion.

GRAPHICS	8	IQ FACTOR	2
AUDIO	7	FUN FACTOR	9

ACE RATING 887

RELEASE BOX

C64/128	£9.99cs, £12.99dk	OUT NOW
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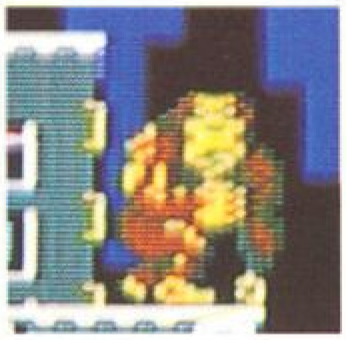
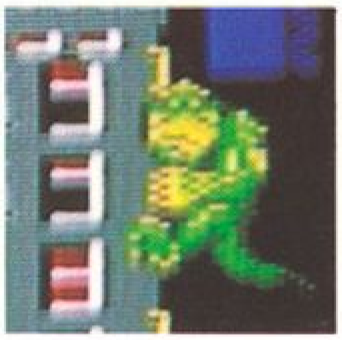
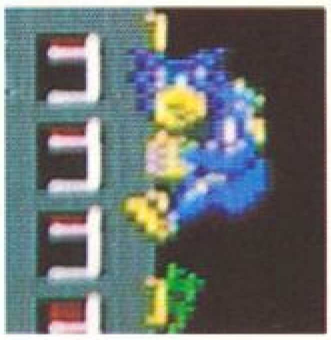

George the gorilla


Lizzie the lizard

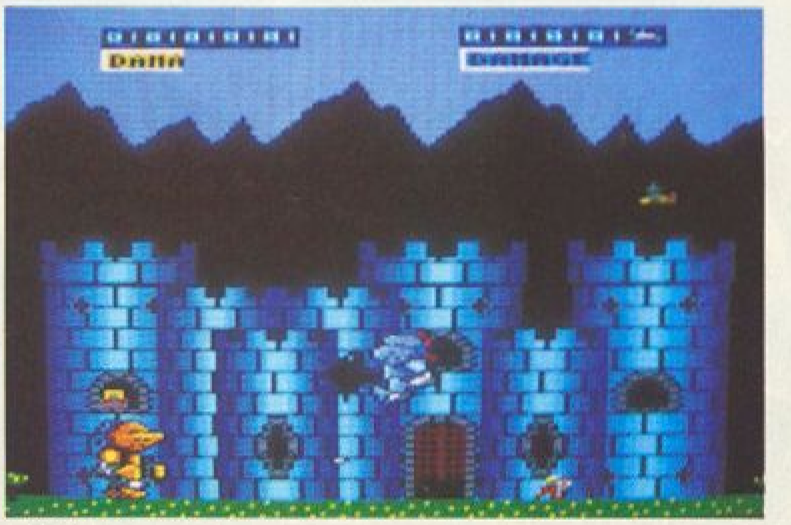

Ralph the wolfman

RAMPARTS

Knights on the tiles from GO!

COINCIDENCE cannot explain a game so close in name and content to *Rampage*. It is of course Go's attempt to cash in on the success of the arcade game with their own copy.

Here you can control two knights as they lay waste to towers and castles. The basic idea is exactly the same as *Rampage*, but the game has been implemented differently in some places.



(AMS) Good looking knights can harm 'yer armour

For a start you can only have a maximum of two players and if you only play with one the computer does not control a second player.

Climbing up the castles is more awkward on this version and you have less moves that can be performed. The buildings are knocked down in the same manner, revealing food and other items as you punch holes in them.

The additional hazards are less interesting and much more lethal, comprising witches who fly across the screen and a couple of

Amstrad Version

The graphics are much better than the 64 version, brighter and more colourful. The gameplay is virtually the same except that you can't even punch upwards. Amstrad owners are best advised to wait and see how *Rampage* works out.

GRAPHICS	7	IQ FACTOR	2
AUDIO	4	FUN FACTOR	5

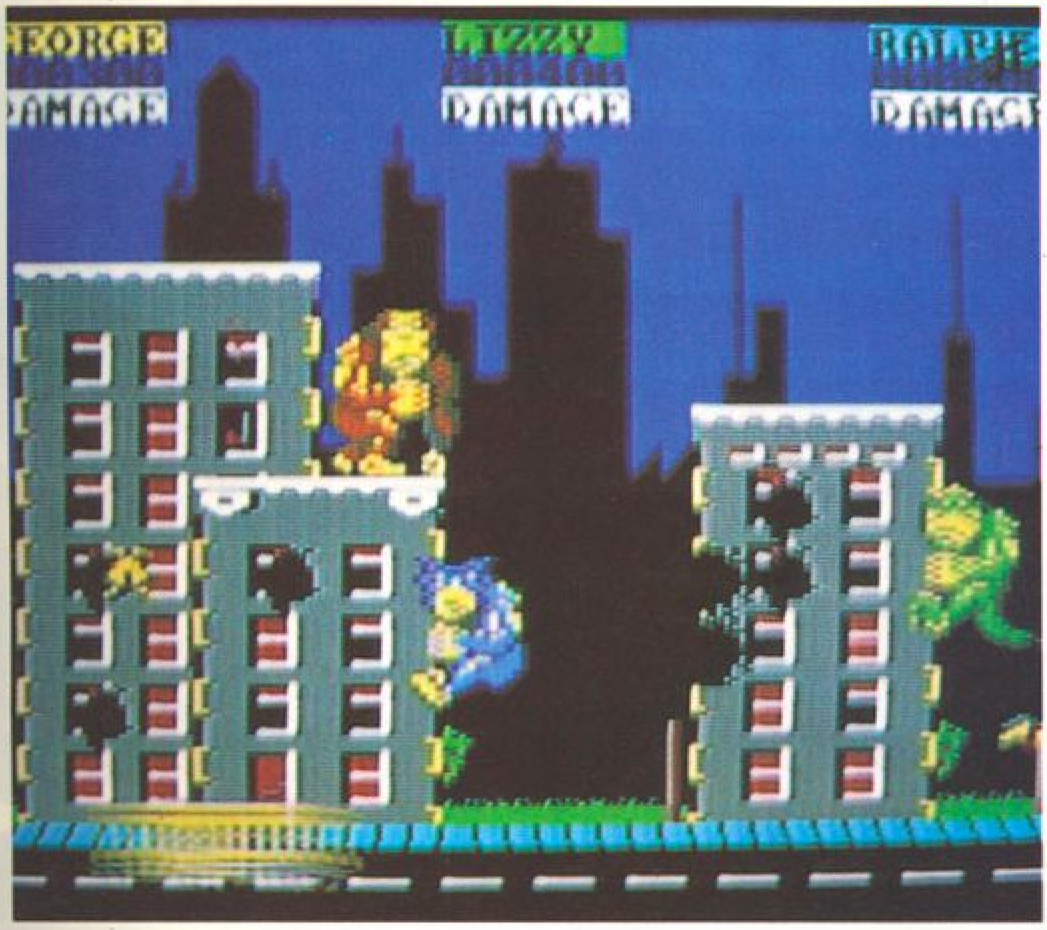
ACE RATING 579

C64 Version

The graphics aren't very good and much of the time look muddy. The collapsing of the towers is also shoddy. The music and the sound effect are average. Control is the major problem – it's difficult to climb the castles because you have to be exactly aligned. There are few features to interest you and the process of dropping towers soon becomes very boring, even with two players.

GRAPHICS	5	IQ FACTOR	2
AUDIO	5	FUN FACTOR	5

ACE RATING 567

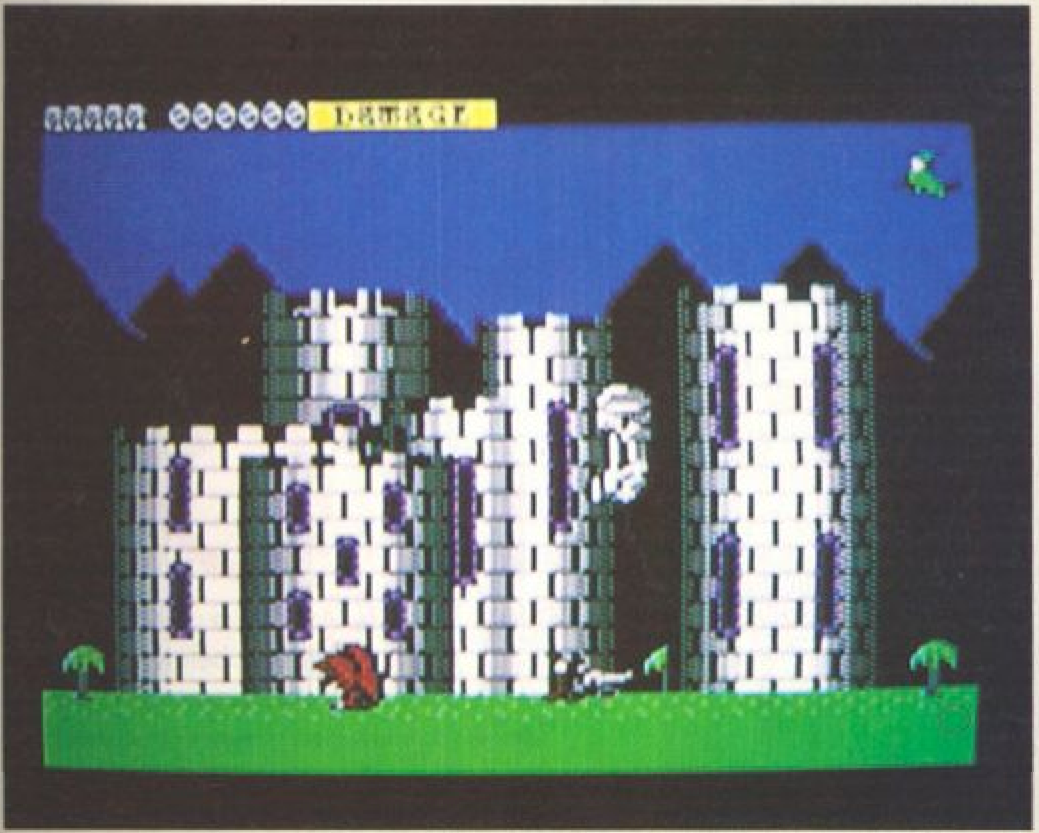


(C64) doing the monster mash with a city that's at your mercy

Page vs Parts

In direct comparison there's only one winner between these two arcade clones.

RAMPAGE			RAMPARTS
It has simultaneous three player action.	✓	✗	You can only have two players at a time.
It has all the punches and controls, including backhanders.	✓	✗	You can't do backhanders or, on the Amstrad,even punch up.
You can fight the other players if you want to.	✓	✗	You can't fight the other player.
There are vehicles going by to crush.	✓	✗	You only get two guys who can be crushed but decrease your energy.
There are 150 different screens to destroy.	✓	✗	There are less than 100 levels.



(C64) No cranes for this demolition job, just two loco knights

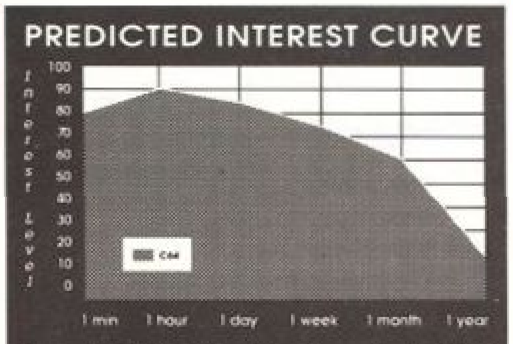
no match for a fifty-foot, raging, junk-food addict. You can take them all out with a punch in the right direction. The most satisfying are the snipers who appear in windows and make a tasty, if chewy, snack.

Food also appears in windows to repair damage suffered, but be careful not to eat objects like cacti and TV sets which do nothing to help your indigestion. Conserving energy is most important, and difficult too when the other monsters can also try to punch your lights out.

Building bashing is immensely enjoyable, particularly when you can have three players going at it at the same time. It lacks variety in the long run, but it's heaven sent for anybody who wants to play the bad guy and indulge in mayhem and demolition on a grand scale.

● Bob Wade

PREDICTED INTEREST CURVE



Tremendous three-player fun gets you hooked, but finally lacks variety.

characters who travel along the bottom of the screen.

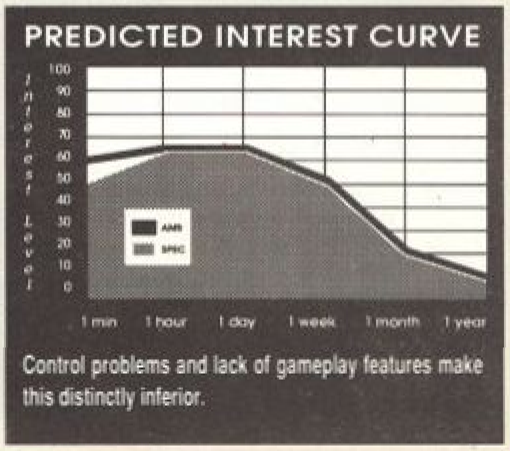
In every department the game is inferior to *Rampage*. This is all the more ironic when you realise that this time last year the tables were reversed with US Gold having *Gauntlet*, an excellent arcade conversion, copied by Electric Dreams with a game called *Dandy*, which was inferior.

● Bob Wade

RELEASE BOX

C64/128	£9.99cs, £11.99dk	OUT NOW
SPEC	£8.99cs	IMMINENT
AMS	£9.99cs, £14.99dk	OUT NOW

PREDICTED INTEREST CURVE



Control problems and lack of gameplay features make this distinctly inferior.

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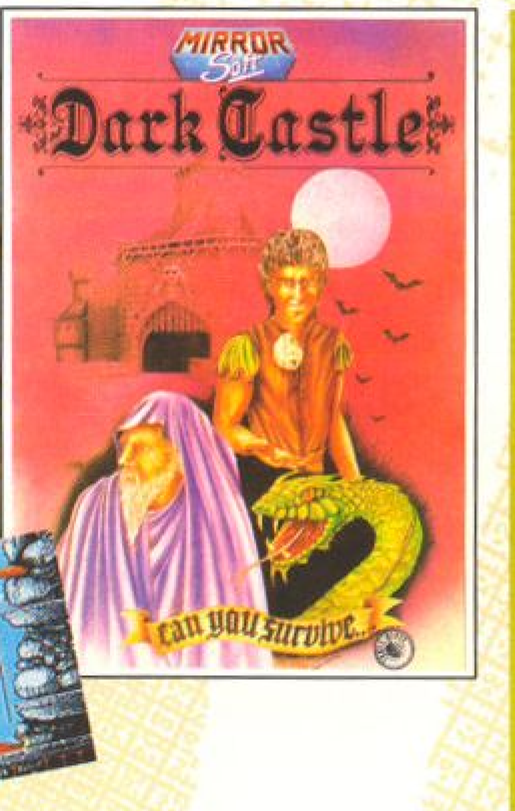

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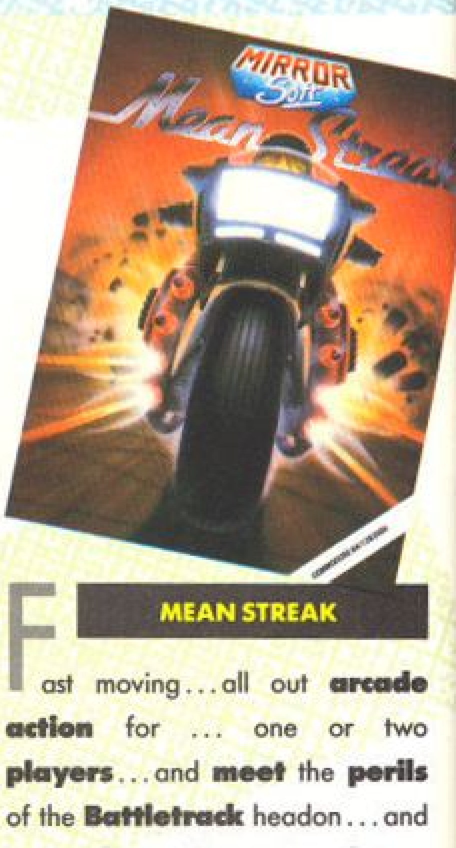

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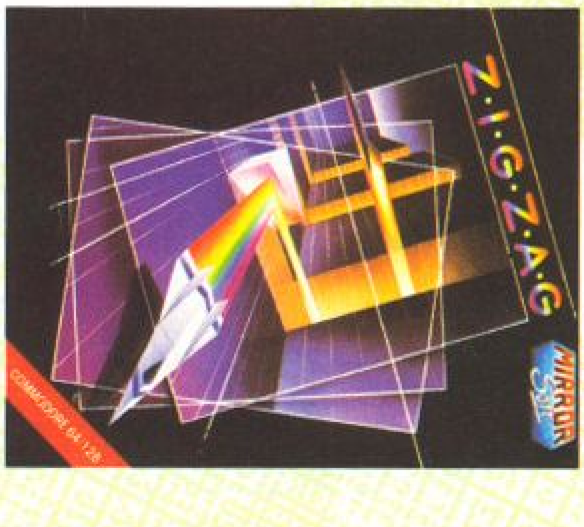

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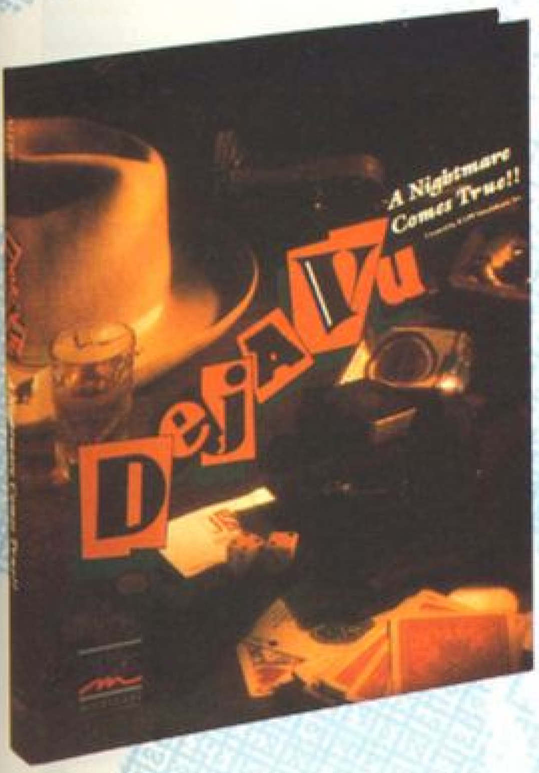
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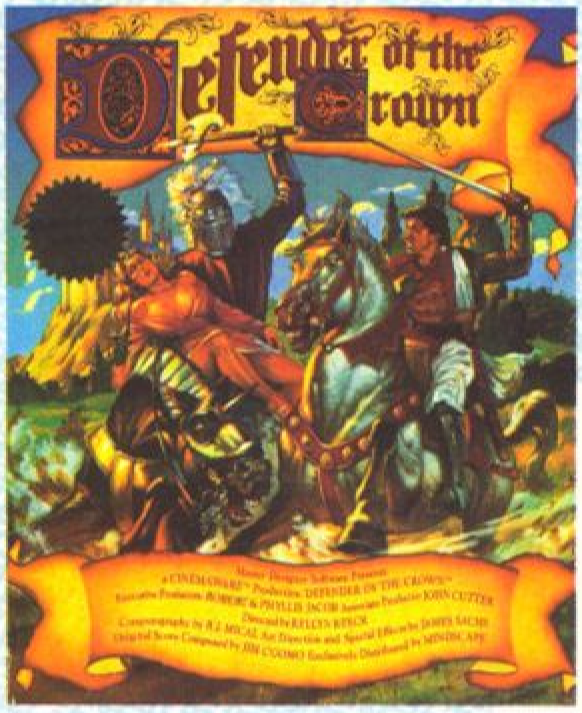
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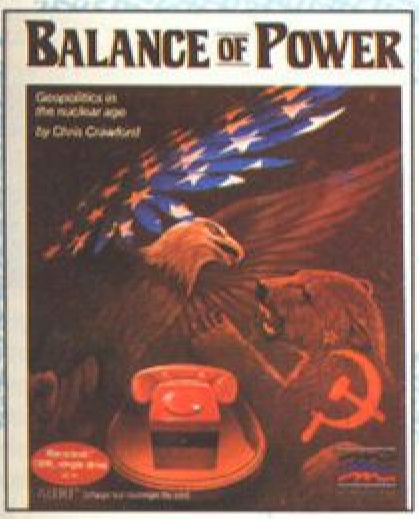
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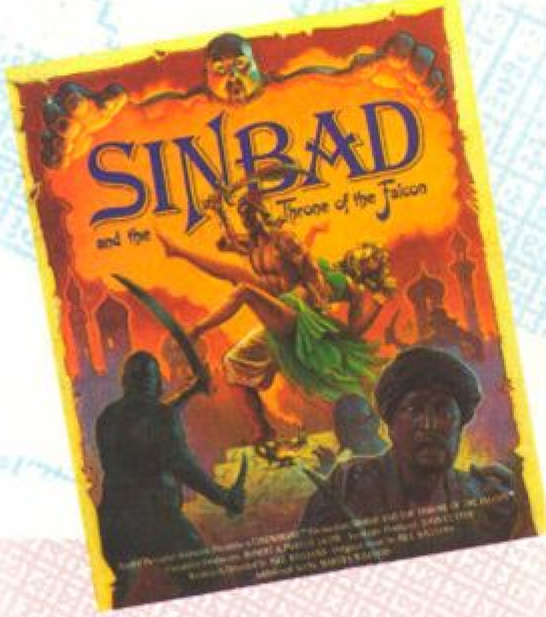
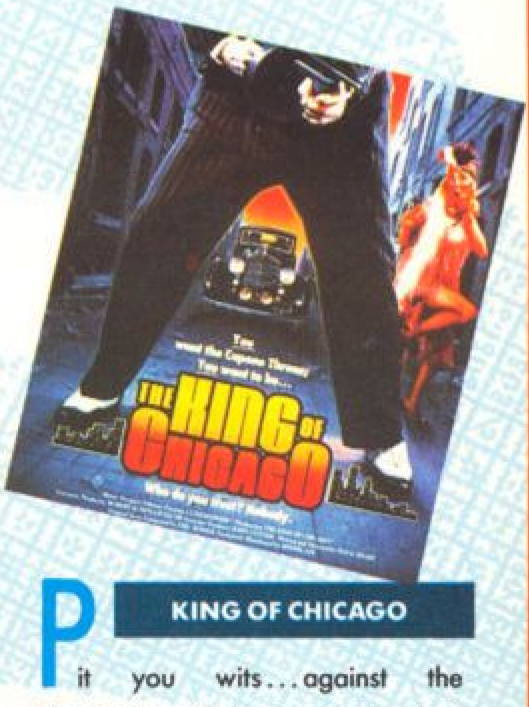

SINBAD and the Throne of the Falcon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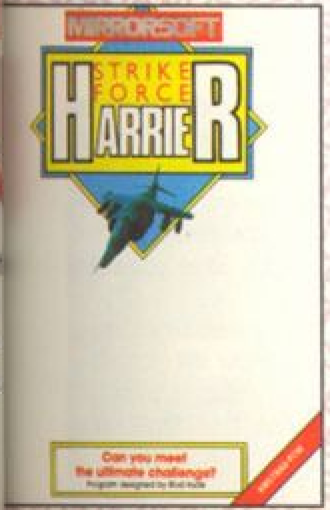
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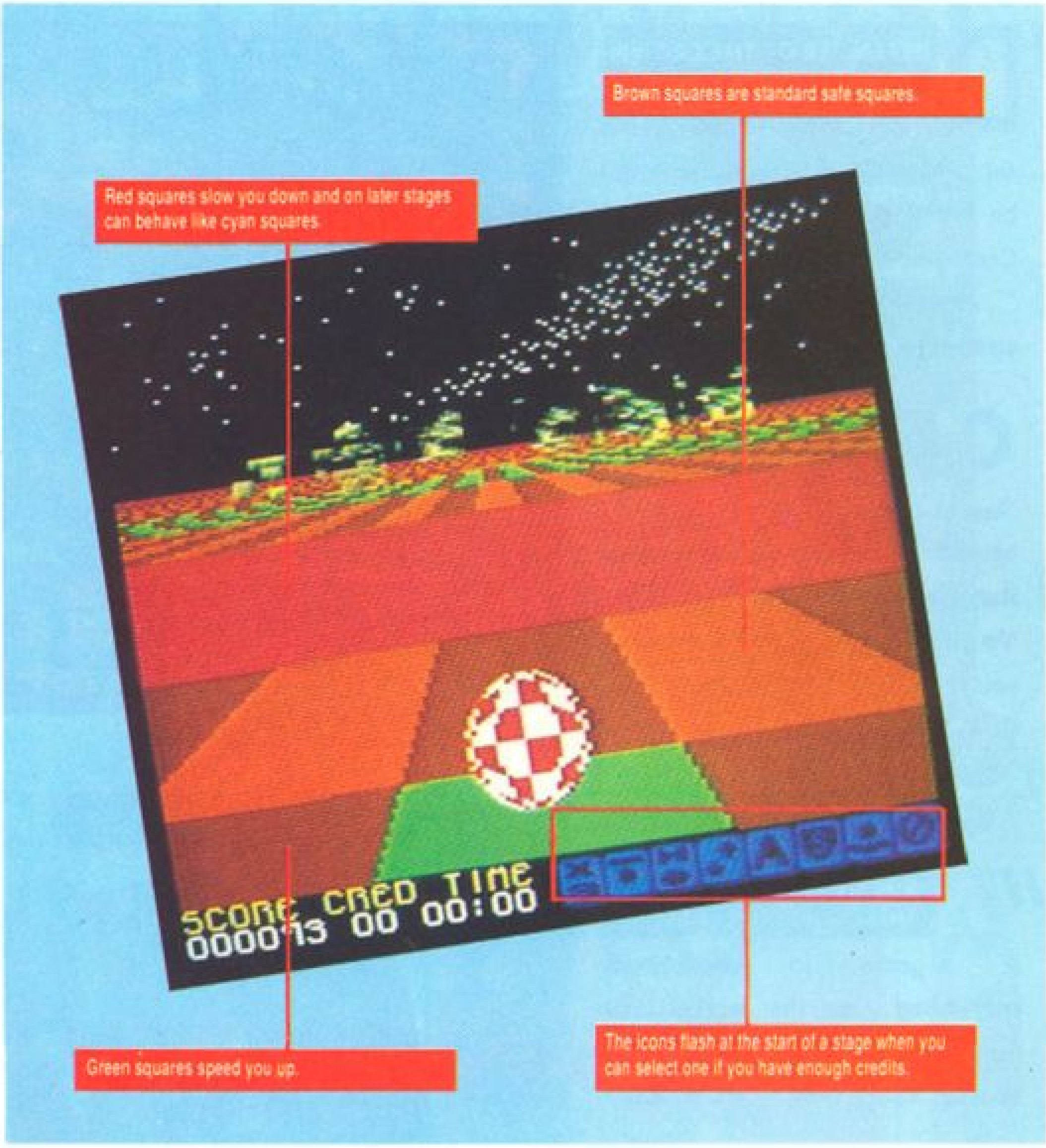


Brown squares are standard safe squares.
Red squares slow you down and on later stages can behave like cyan squares.
SCORE CRED TIME
0000 13 00 00:00
Green squares speed you up.
The icons flash at the start of a stage when you can select one if you have enough credits.

RELEASE BOX

C64/128	£9.99cs, £14.99dk	OUT NOW
No other versions planned		

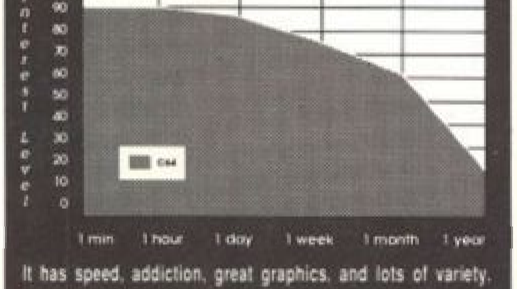
C64 Version

The scrolling courses are excellent, zipping by at high speed. The graphics have been improved from the original and have sprites thrown in for the obstacles and dragons. This makes it look terrific and gives a real impression of speed. The music too is pleasant and drives along well. The controls are responsive and well thought out, to make the gameplay a joy.

GRAPHICS	9	IQ FACTOR	5
AUDIO	7	FUN FACTOR	9

ACE RATING 900

PREDICTED INTEREST CURVE



It has speed, addiction, great graphics, and lots of variety. Takes the original concept to new heights.

COSMIC CAUSEWAY

ACE 900 RATED

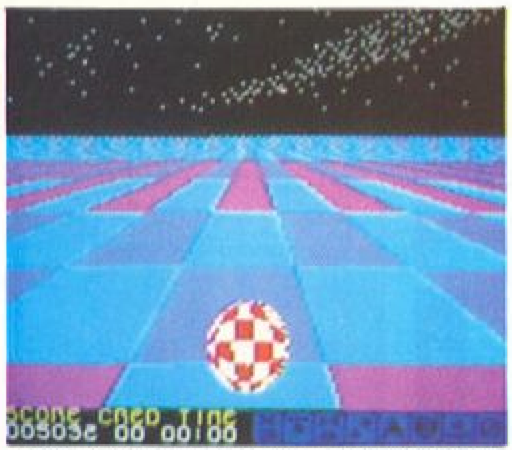
High-speed balls from GREMLIN

BLAZING a trail is the aim of the game, because this is *Trailblazer II*. It takes you into ever more abstract and dangerous landscapes in its quest for speed and addictive gameplay.

You're in control of a big bouncing ball, viewed from behind as the landscape scrolls towards you. In the original it was just a 'belt' of land, but now it's the whole screen width. The original also had a split-screen display for two-player action and that too has been dispensed with.

The landscape is broken into 24 stages, making up six sections. Each stage has to be completed within a time limit and at the end of every section there's a climactic battle with a flying dragon.

The routes are made up of eight different coloured blocks, each of which has a different effect on the ball. Most of the squares will be familiar from *Trailblazer* and include: safe squares, bounce squares, speed-ups, slow-downs, abyss, control reverse and bounce backwards. They aren't in particularly tortuous layouts, but that's just as well.



Purple squares bounce you backwards down the course while cyan squares reverse the controls to confuse you.

What occupies most of your time is dealing with the new hazards that are thrown in. On some levels you will suddenly find a whole stream of objects heading straight at you. These throw you off course if they hit you. Some can be shot just by moving straight ahead, but others are indestructible and you need sharp reflexes to avoid them.

Walls can also stop you in your tracks unless you whizz through the doorways. If all that weren't enough there are the dragons, which are a cross between something from *Space Harrier* and a caterpillar in a Monty Python cartoon. These take multiple shots to kill and have the unmitigated nerve to shoot back.

On each stage there is a white disk which gives you between one and three credits when run into. Credits can be used to buy one of eight bonuses, lasting for one stage only. Fairly cheap skills are: score multiplied by three, rolling on the ceiling, deactivating control disrupting squares and deactivating backward squares. The more expensive ones can give you turbo speed, a shield, allow you to roll over holes and even slow the timer to half speed.

The credits add an extra dimension to the action. Once you start surviving the first few stages you can concentrate on credits to get you even further into the game. Most levels can be 'bottled', until the crunch comes when you meet the dragon. Here you need all the time you can get.

The action is extremely fast, bewildering at first. Once you start to know the routes it is incredibly addictive and easy to play. It's less technically demanding than *Trailblazer* but much more fun and with tremendous variety.

● Bob Wade

TETRIS

ACE 956 RATED

Can MIRRORSOFT pack them in?

DOMINOES might be okay for us western types, but when the Russians really want to stretch their brains they reach straight for the tetrominoes. These handy little things – flat shapes made up by joining four squares together – may not sound terribly exciting, but as the basis of this frighteningly addictive little game they stand a fair chance of taking your brain over completely.

As you'll probably have gathered, we're talking about abstract stuff here – and the geometry isn't about to let up. The playing area is a tall, narrow rectangle into which those tetrominoes fall. Your job is to steer them down, rotating them as necessary, so that they pack together as tightly as possible. Fit the shapes together so snugly that you form a solid row across from left to right and that row will disappear, the shapes above falling down into the space this makes.

Filling rows up and getting rid of them like this is essential, because the shapes keep on coming. As soon as you get one safely in place the next one appears at the top of screen, and the whole time that you're moving it sideways (left or right on joystick) or rotating it (fire button turns it clockwise a quarter turn) it carries on drifting down. If the heap of shapes reaches the top of the screen it's game over, so woe betide you if a shape comes to rest before you've got it into position!

It might sound like you could keep this up indefinitely, but that's reckoning without the deep-down nastiness of the game. Often the shape you have to deal with simply won't pack neatly into the layout you've got, forming either an air pocket or at best an overhang. As you trap empty space in this way you make it impossible to form lines lower down the layout, and raise the overall level of the heap.

As the pile of shapes approaches the top of the screen you start to get knock-on problems. Because shapes have a shorter distance to fall before they come to rest, you've got less time to move them into position. Rotation in particular becomes very difficult higher up the screen and calls for a great deal of dexterity, so arcade skills are needed as well as brain power.

The game's not just a damage limitation exercise – hard work can open pockets up, letting you clear the layout back down to ground level – but the player is really only ever delaying the inevitable. The game will always beat you partially because it can carry on throwing shapes at you all day, but mostly because it speeds up as your score increases. There's a pause mode accessed from the joystick that will save your neck many a time, but you'll still find the speed forces errors in positioning after a while. Combine this with the number of awkward shapes you have to keep stacking space for, and you have a horribly gripping game you won't be able to get out of your head.

● Andy Wilton

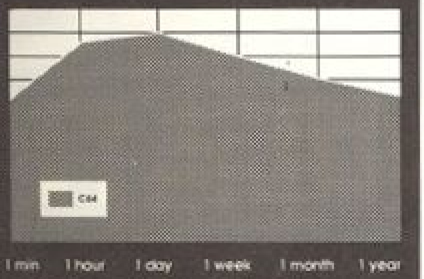
C64 Version

Great music and bright graphics make this very attractive stuff, though it's the kind of brilliantly simple idea that'll work well on almost any machine.

GRAPHICS 7 IQ FACTOR 10
AUDIO 9 FUN FACTOR 8

ACE RATING 956

PREDICTED INTEREST CURVE



Might not look like much, but it's as addictive as they come once you start playing.

RELEASE BOX

C64/128	£8.99cs, £12.99dk	IMMINENT
AMS	£8.99cs, £12.99dk	IMMINENT
SPEC	£8.99cs, £12.99dk	IMMINENT
ST	£19.99dk	IMMINENT
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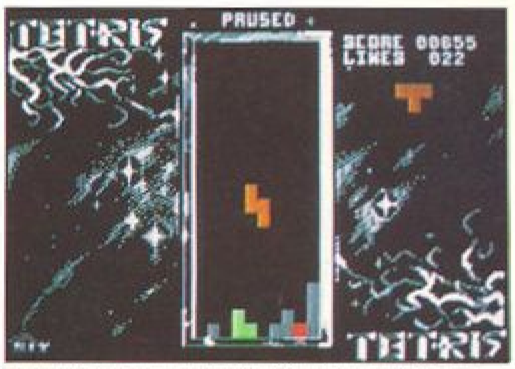
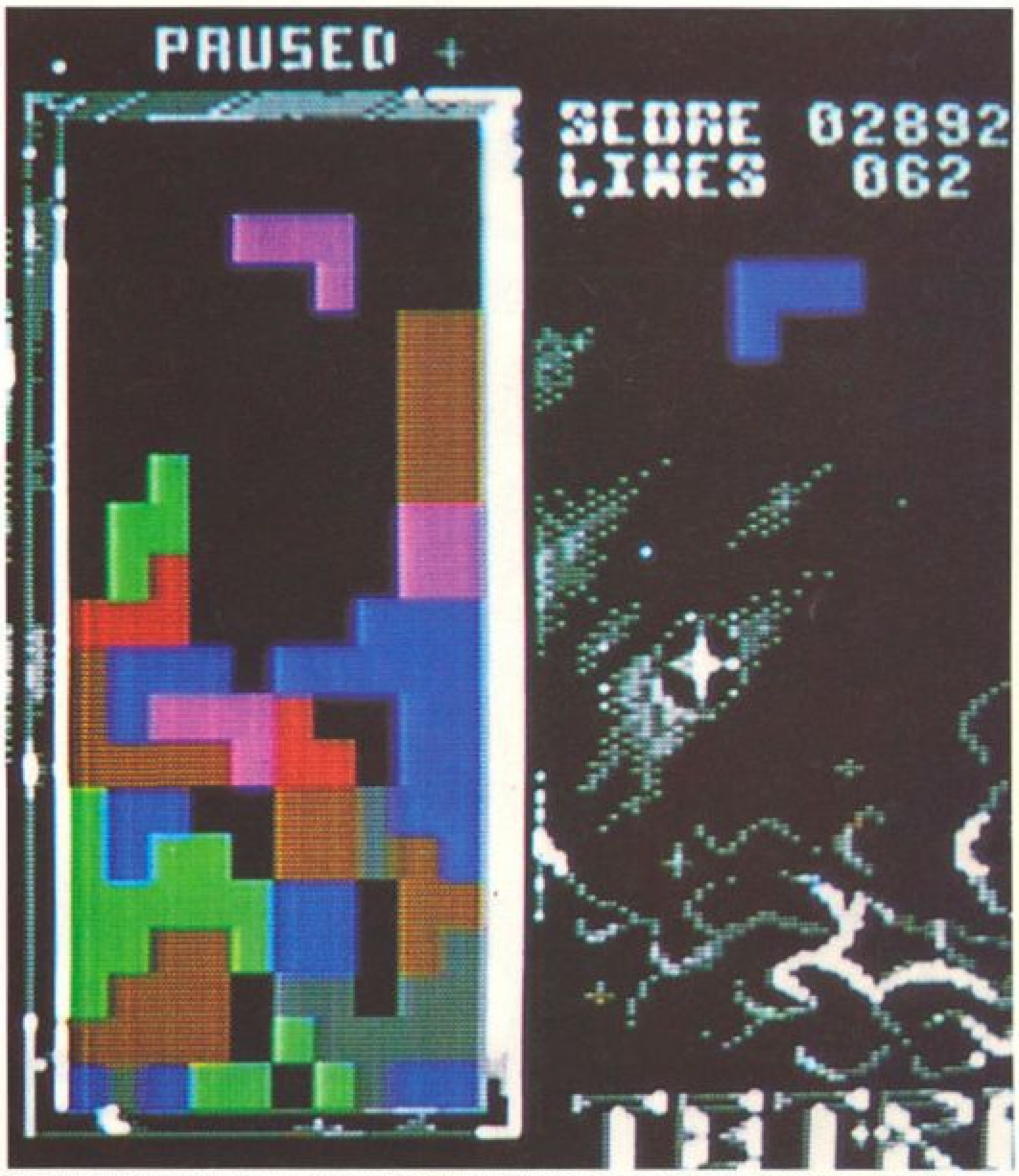


The layout's in fine form still, and that S will fit in nicely. The next shape will be a T – it's shown at top right – and that will fit OK too.



Things have got badly out of hand now, so there's very little time to work that tricky L in to position – and there's another one to follow!

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STAR TREK

Are FIREBIRD'S phasers set to stun?

ONE five-year mission coming up, with the Enterprise battling to rid the galaxy of a new telepathic weapon. Times are hard: Federation (good guy) starships are defecting to the Klingon (bad guy) side in their droves under the weapon's influence, and with the Romulans on the warpath you needn't expect too much help from the neutrals either.

You control Kirk and his crew as they warp from system to system, fending off enemy attack and beaming down to collect handy items. Landing parties will win or lose the game for you – all the possible Klingon-thwarting strategies depend on people or equipment located on life-supporting planets – but you'll need to find inhabited systems first, and they often harbour hostile ships bent on destroying you.

The game starts with the Enterprise in deep space, so your first task is to fly to a star system. Like all game operations, ship navigation is controlled by an unusual and not always helpful icon system: getting to grips with this is essential.

Along the bottom and right edges of the main screen are small windows showing different members of the Enterprise crew. Click on one of these with the pointer (a Starfleet badge controlled using the mouse) and the crew member appears enlarged on the main screen, along with information or icons relating to that his or her duties. The most useful people are Spock (data on planets, systems and ship status), Chekhov (icons controlling Enterprise weaponry) and Sulu (navigation icons). Uhura, Scotty and McCoy offer data on incoming messages, engine status and crew health while Kirk is in charge of stores and the transporters.

Often the icons call up further screens of controls rather than affecting things directly. The Chekhov icons, for example, call up the combat scanner, weapons selection screen and targetting computer. Controlling the ship is largely a matter of getting the right icons on screen – using them once you've got them involves little skill – and this can get uncommonly tedious. Combat is particularly dull – aiming is almost entirely automatic – and you can end up feeling more like a clerk than a starship captain.

As for those all important landing parties, these really are a disappointment. There is no exploration as such – the only directions you can move in are straight ahead or back to the ship – and no pictures or descriptions of the planet surface: just messages telling you of objects or obstacles. Actions here are decided by a clumsy form of multiple choice, and these sequences soon become mindlessly repetitive.

If you're a big *Star Trek* fan you'll be bowled over by the graphics and sound as soon as you see the game, but your awe is unlikely to last. As with *Defender of the Crown* on the Amiga the inspired presentation masks humdrum gameplay, and even with the unhelpful icons you'll soon find survival and exploration far too easy. With a safe, well equipped star system as a base you can keep going as long as your interest lasts: but unless you're a mapping enthusiast with a low boredom threshold, that probably won't be very long.

● Andy Wilton

RELEASE BOX

ATARI ST	£19.95dk	OUT NOW
C64/128	UNDECIDED	EARLY 88
SPEC	UNDECIDED	EARLY 88
SPEC 128k	UNDECIDED	EARLY 88

ST Version

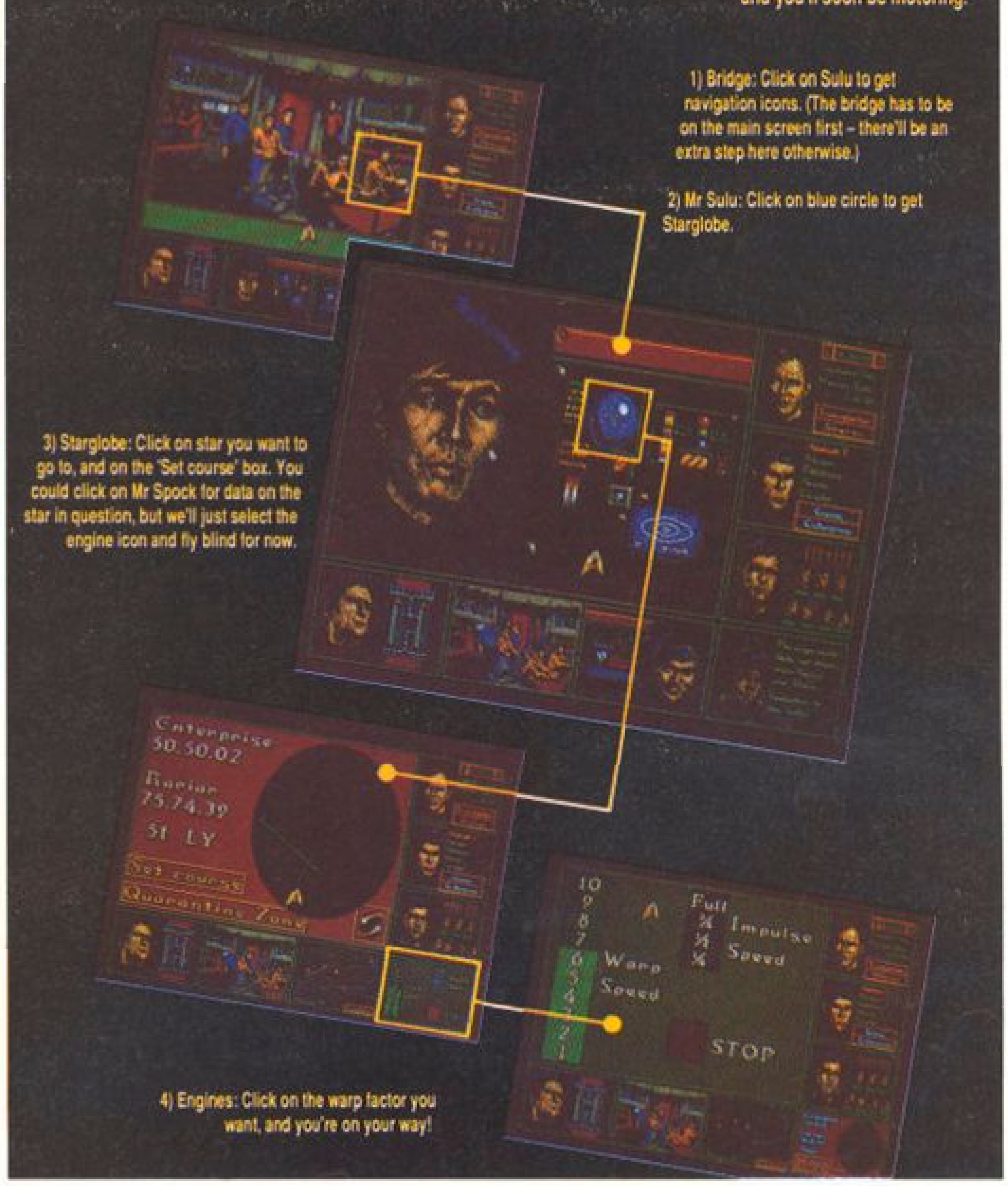
The digitised portraits and sampled sound are just the ticket, but the combat and navigation graphics make poor use of the ST's processing power. Those icons are annoying even with a mouse – so what'll the 8-bit versions be like?

GRAPHICS	8	IQ FACTOR	3
AUDIO	8	FUN FACTOR	4

ACE RATING 764

Interstellar navigation made easy

Want to seek out new forms of life? Then follow these four simple steps (or five if you want to know where you're going) and you'll soon be motoring.



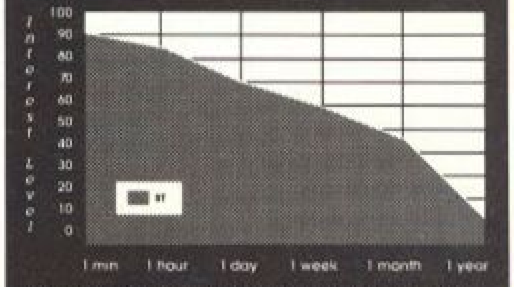
1) Bridge: Click on Sulu to get navigation icons. (The bridge has to be on the main screen first – there'll be an extra step here otherwise.)

2) Mr Sulu: Click on blue circle to get Starglobe.

3) Starglobe: Click on star you want to go to, and on the 'Set course' box. You could click on Mr Spock for data on the star in question, but we'll just select the engine icon and fly blind for now.

4) Engines: Click on the warp factor you want, and you're on your way!

PREDICTED INTEREST CURVE



Graphics and sound make a good first impression, but the repetition soon dulls the shine.

MATCHDAY II

OCEAN make it 2-0

ACE 906 RATED

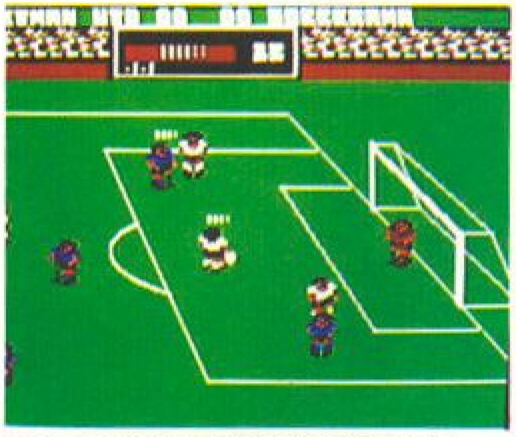
MATCHDAY has achieved cult status – can *Matchday 2* improve on what many still consider to be the definitive football game?

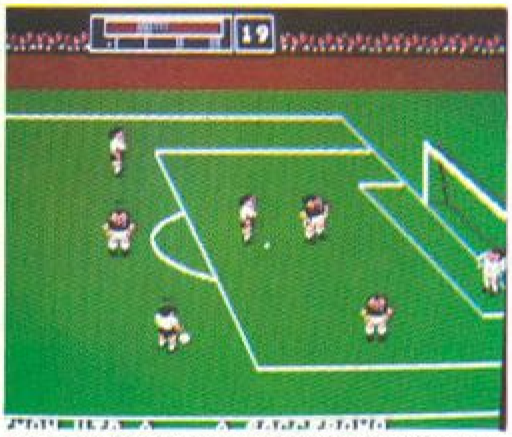
At first glance, the game seems very similar to its predecessor. The player takes charge of a six man football team and has to play matches against either the computer or a friend in an attempt to win the League or the Cup. This is where the first improvement becomes obvious. Not only can you play solo against the computer but you and a friend can gang up on it, both playing for the same side in a desperate attempt to prove human superiority. During a solo game you control the on-screen player who is in the best position to reach the ball and when playing in pairs you get a player each.

The second major improvement in the game is the addition of the 'Kickometer'. This is a kick strength indicator which affects the distance of each shot. The 'Kickometer' ranges, broadly, on a scale from one to three with three being the hardest kick. To use this facility properly, the player has to keep his eye on the meter to decide when to make the best shot. Thankfully the meter can be set to shoot at a set strength throughout the game.

Basic tactics can now also be decided by the player, though you only have a choice of attack or defend. One feature removed from the game is the ability to play a full 45 minutes per half.

Gameplay has been improved to allow players to make headers, backheel the ball


C64 version – not the best version on the gameplay front, but colourful and well animated.


The superiority of the Amstrad version is clearly visible. Shame you can't see the game's playability.

C64 Version

Unfortunately, something seems to have been lost in the translation to the C64 – the game is not as playable as the other versions, though it is as colourful as the Amstrad and more so than the Spectrum versions. It's still a very competent soccer game and interested C64 owners would not be disappointed.

GRAPHICS	7	IQ FACTOR	5
AUDIO	6	FUN FACTOR	8

ACE RATING 838

Amstrad Version

The graphics are wonderful. The gameplay is slow to watch but plenty fast enough when it comes to playing. All of the new additions make it slightly harder to master than the original but get the hang of the 'Kickometer' and you'll soon be bitten by the footballing bug. Thankfully the computer's skill level can be raised or lowered to give you a more balanced game.

GRAPHICS	8	IQ FACTOR	5
AUDIO	6	FUN FACTOR	8

ACE RATING 906

GARY LINEKER'S

GREMLIN'S own goal?

FANTASIES are made of this: join a fourth division team as centre forward and win promotion to the first division. Not only does *Gary Lineker's Superstar Soccer* give you the chance to participate in the games but it also allows you to play manager (and coach) and make all the really important decisions. Unfortunately Gremlin's program is not the stuff of which dreams are made...

There are two basic sections to the game; on-screen playing and the tactical decision making. During the former you wear the centre forward's shirt and the computer handles the rest of the players. The idea is to anticipate the movements of the rest of the team and to put yourself in the best possible attacking position.

Whenever the ball goes out of play (throw ins, free kicks etc) the screen changes and gives the player the chance to make the all-important tactical decisions e.g. the player can choose to Shoot, Pass or Mix. SHOOT means that all the players on your side in a position to kick the ball will have a shot at goal, PASS means the rest of the players will try and pass the ball to the centre forward (you) and MIX is, as the name suggests, a mixture of both. There are also defensive decisions to be made including cover (which is a concerted effort by your team members to regain possession of the ball) and defend which results in the players staying back and shoring up the defence.

For each match a time compressor is included, where the

RELEASE BOX

C64/128	£9.99cs, £14.99dk	OUT NOW
SPEC	£9.99cs	OUT NOW
AMS	£9.99cs, £14.99dk	IMMINENT
ATARI ST	£19.99 dk	IMMINENT

'...and Gremlin have headed this one in with both feet...'

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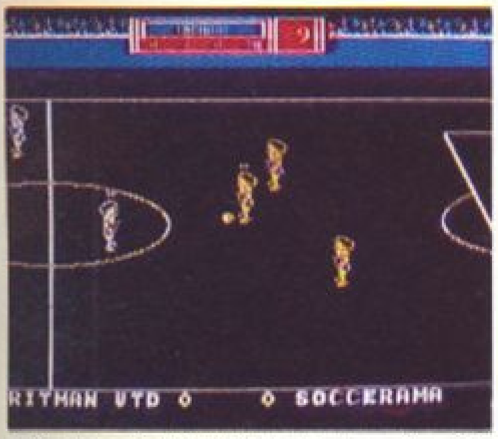
and barge opposing team members. Another improvement is the realism of deflections. In real life the ball's angle of deflection is affected not only by its original flight path but also by the movement of whatever the ball was deflected off; this has now been taken into account.

All of the above refinements (and others too numerous to mention in this limited space) make for one fine football game and even if you own the original game, the sequel has enough enhancements to make it worthy of purchase.

● Andy Smith



The Spectrum version highlighting the colour change option which is very useful if your T.V.'s not quite state of the art.

RELEASE BOX

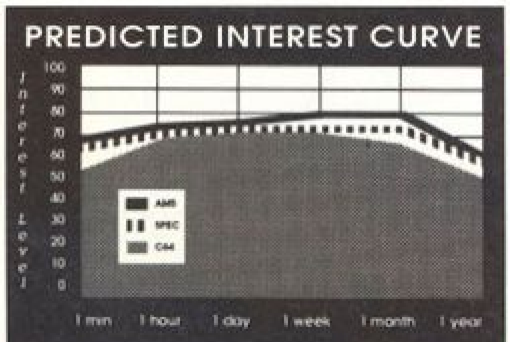
C64/128	£8.95cs, £12.95dk	OUT NOW
SPEC	£7.95cs, £14.95dk	OUT NOW
AMS	£8.95cs, £14.95dk	OUT NOW

Spectrum Version

Despite the lack of colour, the Spectrum version of the game is every bit as compelling, frustrating and enjoyable as the other versions. The characters move around the pitch slightly faster on Spectrum turf than on Amstrad turf, and this makes for a marginally better game. A minor niggle is the fact that it is sometimes difficult to spot your player when there are several others jostling for the ball. Every bit as exciting and as playable as any other version.

GRAPHICS	8	IQ FACTOR	5
AUDIO	5	FUN FACTOR	8

ACE RATING 881



The C64 version doesn't quite match the Spectrum or Amstrad versions for playability. But even so, across the board, the game's a winner. Overall it is an improvement on its predecessor and is now the best football action game for micros.

R'S SUPERSTAR SOCCER

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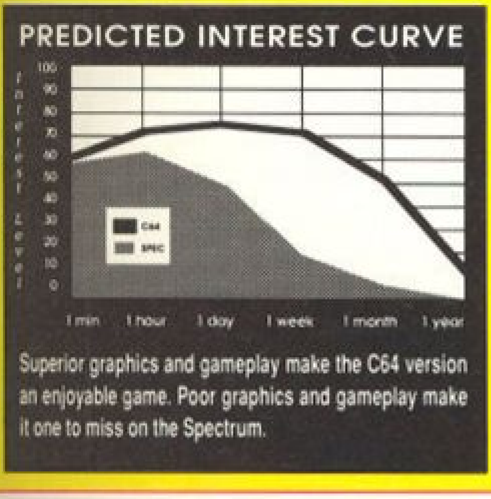
player can speed up the game (this compressor varies with the various versions but it can be set to run at 10 times normal speed on all versions). This is jolly handy if you don't want to sit through the full 45 minutes per side.

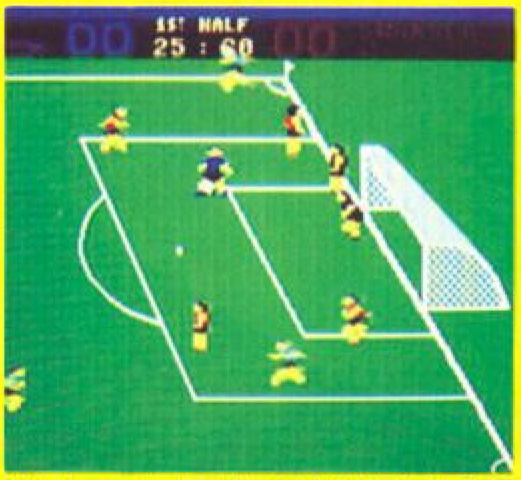
It's not all fun and games on the turf though; those all-important managerial decisions have to be made – should you try to recruit a new player? Should you try and trade one of your ageing players? Should you use some of your valuable trade points at the start of the season in an attempt to improve the general performance of your team?

Gary Lineker's Superstar Soccer is a valiant effort to combine two highly popular minority interests – the football game simulation and the football strategy game. Unfortunately all it manages to do is oversimplify both types of game and consequently leaves the player feeling a little left out of it all.

● Andy Smith



Superior graphics and gameplay make the C64 version an enjoyable game. Poor graphics and gameplay make it one to miss on the Spectrum.



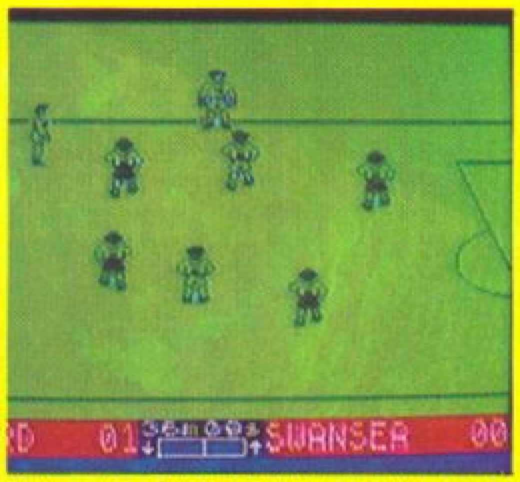
C64 version – graphically superior and a lot better to play. A real shame about the awful Americanisms present in the program.

C64 Version

Generally a much better game on the C64, though it smacks of Americanisms (the C64 version was written by American software house Mindscape). For example, if you're playing a cup match and at the end of normal play the match is a draw, the teams get to play 'overtime' (not extra time) and the first team to score during this period wins. Generally the play is fast and involving and it's nice to see the players performing overhead bicycle kicks with surprising accuracy. Extras are included in the shape of 'off the ball' incidents which add atmosphere to the game. Since you're playing only one player, however, the action palls rapidly. There is a slight improvement on the strategy side with a couple of extra options, but even so gameplay soon becomes tedious and only the most dedicated fans will stay involved for any great length of time.

GRAPHICS	7	IQ FACTOR	6
AUDIO	6	FUN FACTOR	6

ACE RATING 739



Spectrum version – pretty tough to tell who's who in this version of the game.

Spectrum Version

The characters are well drawn but poorly animated, the play is fast and it's almost impossible to distinguish which is your character from the rest of the players. There are some terrible glitches in the game – a game of three halves would you believe? It's also perfectly legal to pinch the ball from the opposition just before they kick off and run it into the back of their net for another goal, or so it would seem in *Gary Lineker's Superstar Soccer*.

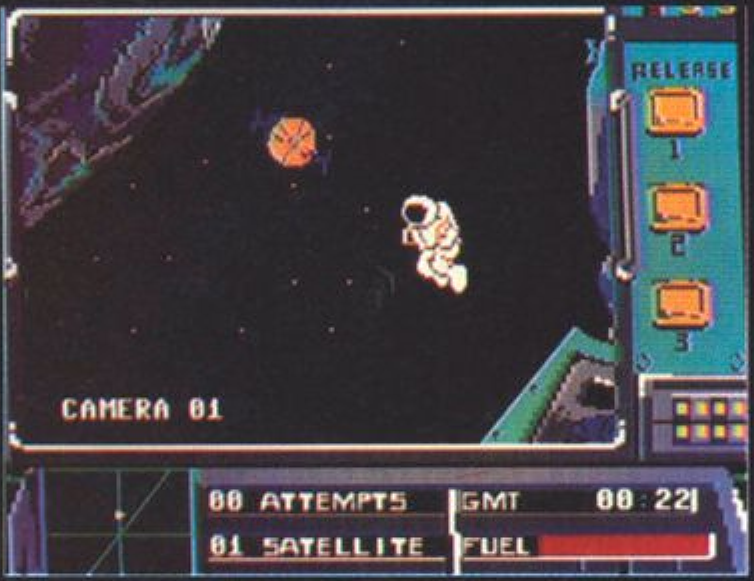
The strategy side of things is OK as far as it goes and can be quite involving – for a while. The player gains 'trade points' depending on his level of success during the 7 match season and has to spend them effectively in order to further his club. Unfortunately the interest soon palls even here because of the limited scope for decision-making.

GRAPHICS	6	IQ FACTOR	5
AUDIO	4	FUN FACTOR	5

ACE RATING 419

APOLLO 18
TEST DR

FIRST...... TRY TO DECIDE WHETHER APOLLO 18 IS BET
BET YOU CAN'T. THEY BOTH HAVE GREAT ACT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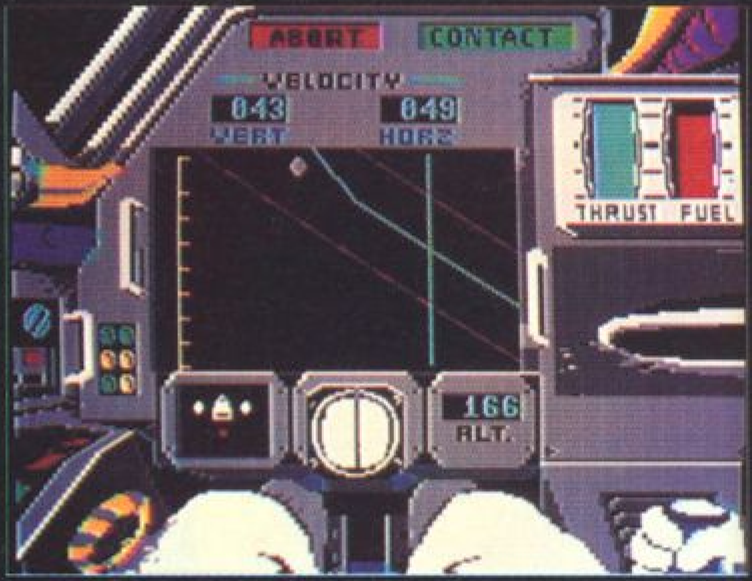
01 SATELLITE
FUEL

SPACEWALK TO A CRIPPLED SURVEILLANCE SATELLITE. ZERO GRAVITY AND ZERO MARGIN FOR ERROR!


ABORT
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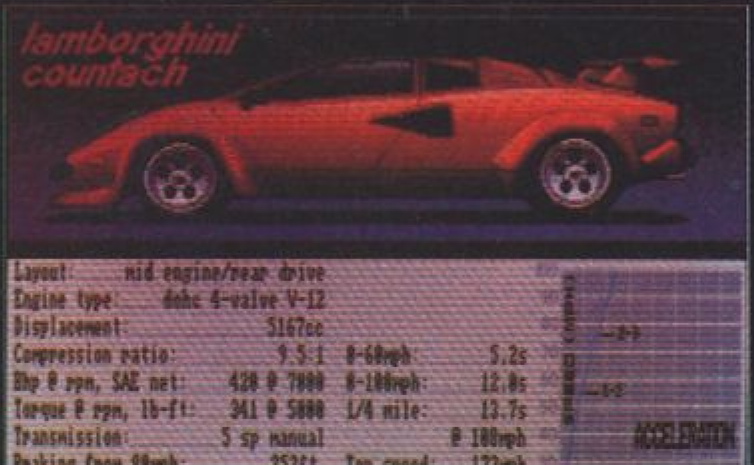
ARE THEY CRATERS OR BOULDERS BELOW? YOU NEED TO BE COOL TO TAKE MANUAL CONTROL OF THE APOLLO LANDER DURING DESCENT.


lamborghini
countach
ACCELERATION

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Layout:            mid engine/rear drive
Engine type:          dohc 4-valve V-12
Displacement:                    5167cc
Compression ratio:                9.5:1  0-60mph          5.2s
Bhp @ rpm, SAE net:         420 @ 7000  0-100mph:       12.0s
Torque @ rpm, lb-ft:        341 @ 5000  1/4 mile:       13.7s
Transmission:             5 sp manual                 @ 108mph
Braking from 80mph:              252ft.  Top speed:     173mph
Tires:                    Pirelli P7R;  lb/Bhp:           8.1
                       225/50VR-15(f)   Lateral Accel: 0.88g
                       345/35VR-15(r)
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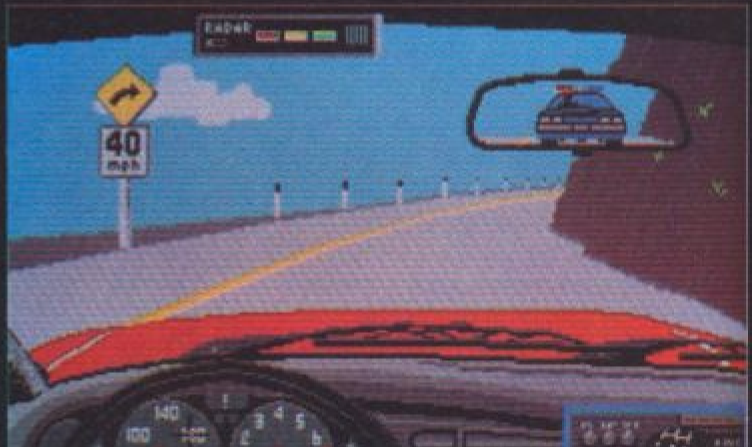
THE DETAILED SPEC CHART FOR THE LAMBORGHINI COUNTACH. 173 MPH AND 0-60 IN JUST 5.2 SECONDS!


RADAR
40
mph

DRIVE SET ROUTES WITHIN GIVEN TIME LIMITS. LOOK OUT FOR SLOW TRUCKS, OTHER TRAFFIC, MEN AT WORK AND BE CAREFUL TO USE YOUR RADAR DETECTOR TO LOCATE SPEED TRAPS.

THEN...... GO OUT AND BUY THEM BOTH. BET YOU WILL.
BECAUSE THEY'RE THE BEST AROUND.

8★VS★

RVE

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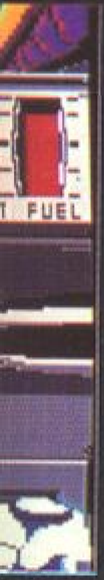
ACTI AND FANTASTIC SCREENS.



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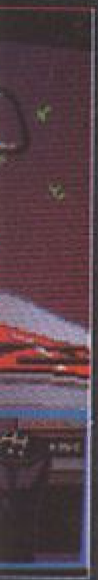

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APOLLO 18

APOLLO 18
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ACCOLADE

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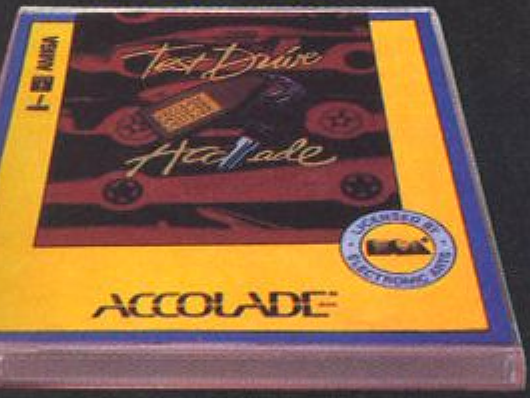
TEST DRIVE



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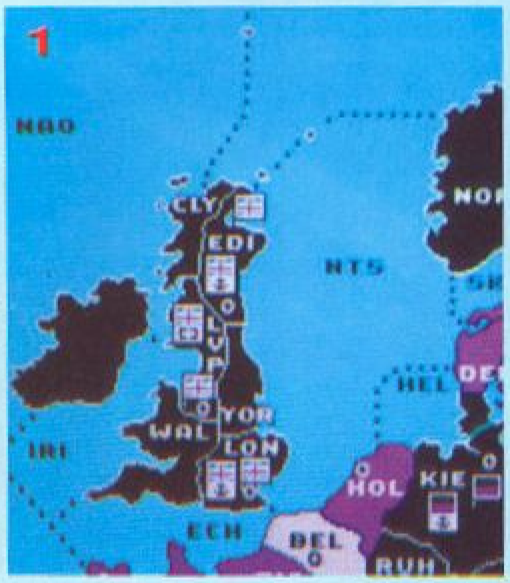
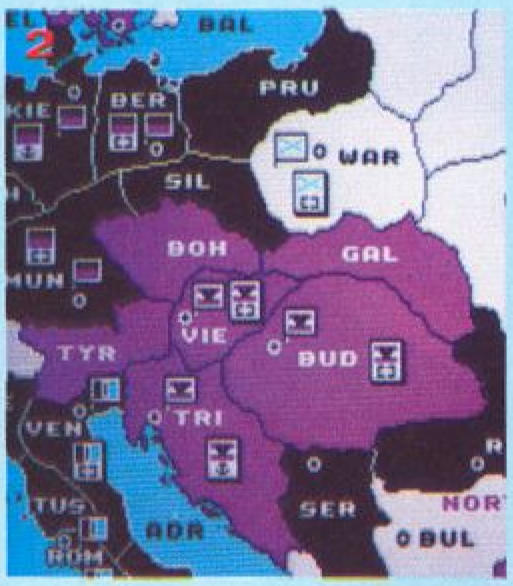
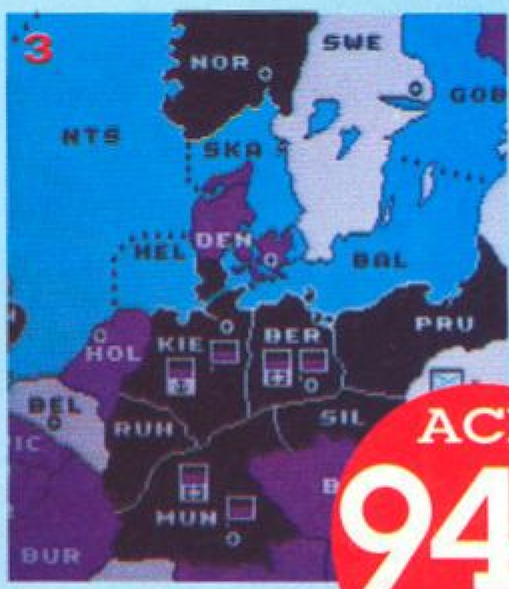






ACE
94
RATE

DIPLOMACY

Break off relations with LEISURE GENIUS

DEVIOUS treacherous, conniving backstabbers of the world, your time has come! That grand old man of nasty negotiation boardgames has finally made it onto home computers, and international perfidy has never been so much fun.

It's the first year of the 20th century, and Europe is on the verge of a massive land-sea war. The seven major powers - Britain, France, Germany, Russia, Italy, Turkey and Austria-Hungary - are each out to conquer the continent. In their struggle for smaller nations' (and each other's) territory the seven players will continually make and break alliances. There can only be one winner - the victory conditions ensure this - so cynical attacks on allies are not only permissible but inevitable.

RELEASE BOX		
C64/128	£12.95cs, £14.95dk	FEB 88
IBM PC	£24.95dk	REVIEWED
No other versions planned		

Treacherous moves are assisted by the game's system of command. Players take turns at the keyboard entering secret movement orders for each of their armies or fleets, but all units move simultaneously - and only once all the orders are in. Thus you might order your forces to turn on your (former) ally while in his orders he's still keeping up his end of the bargain. This gives you at least one turn to wreak havoc, and that's a long time in *Diplomacy*.

The game is played on a grand scale, with each turn equivalent to six months of war. The first two turns, Spring and Fall 1901, are normally spent invading small, defenseless nations in preparation for the main event, but don't get the idea that this is simply a land-rush. Territory is the key to the game, but not just any old territory: of the 75 areas on the map, only 34 are directly useful to the players. These crucial 'supply centres' have the manpower and industrial muscle you need to maintain your war effort: occupying other areas, sea or land, is useful only as a means of gaining or keeping control of centres.

Military might and control of supply centres are directly related: broadly speaking, a country has as many units as it controls centres. If your armed forces conquer enemy-controlled centres you can use the gains to build new units back home, but if you start losing centres to the opposition you'll have to disband units accordingly. This system means that there can never be more than 34 units on the map at any one time, one country's gain being (after the smaller nations have fallen) another's loss.

Even with this upper limit on total forces, the map can get pretty crowded in places. *Diplomacy*'s rules only allow one unit in any one map area, and the game's unusual conflict system means that units are very rarely destroyed in battle. (A defeat normally just loses you ground - but of course you can only lose so much ground before your supply centres start falling.)

It's hard to stress the social side of *Diplomacy* enough - the solid teamwork and gleeful betrayals that seem to go hand in hand - but there's a biggish mental challenge as well. Though the rules are much simpler than in most games, the fact that everything happens at once and the absence of random factors give you an enormous amount to consider when writing orders. It's engrossing, madly addictive stuff whatever level you play it on: it can even offer simple fun as a single-player game with six computer opponents, if you want an easy victory!

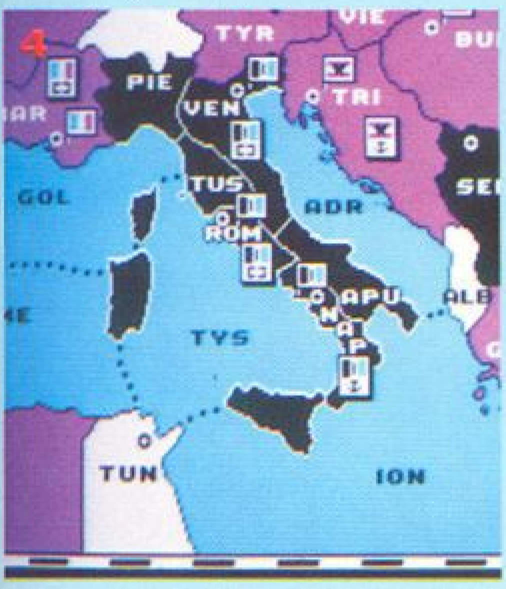
● Andy Wilton

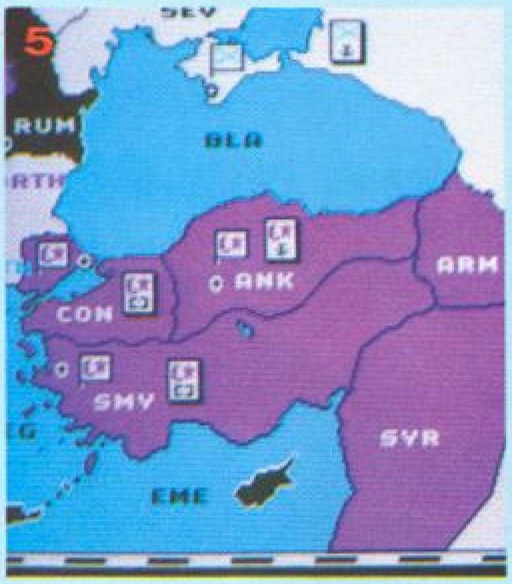
PC Version

With a marvellous scrolling map in CGA cyan and magenta, a friendly control system (after a bit of experimenting) and a built-in timer, this version's a joy to use. The computer players may not be the strongest things ever, but they're at least halfway smart and really spice up three- or four-player games a treat.

GRAPHICS	8	IQ FACTOR	9
AUDIO	1	FUN FACTOR	7

ACE RATING 949





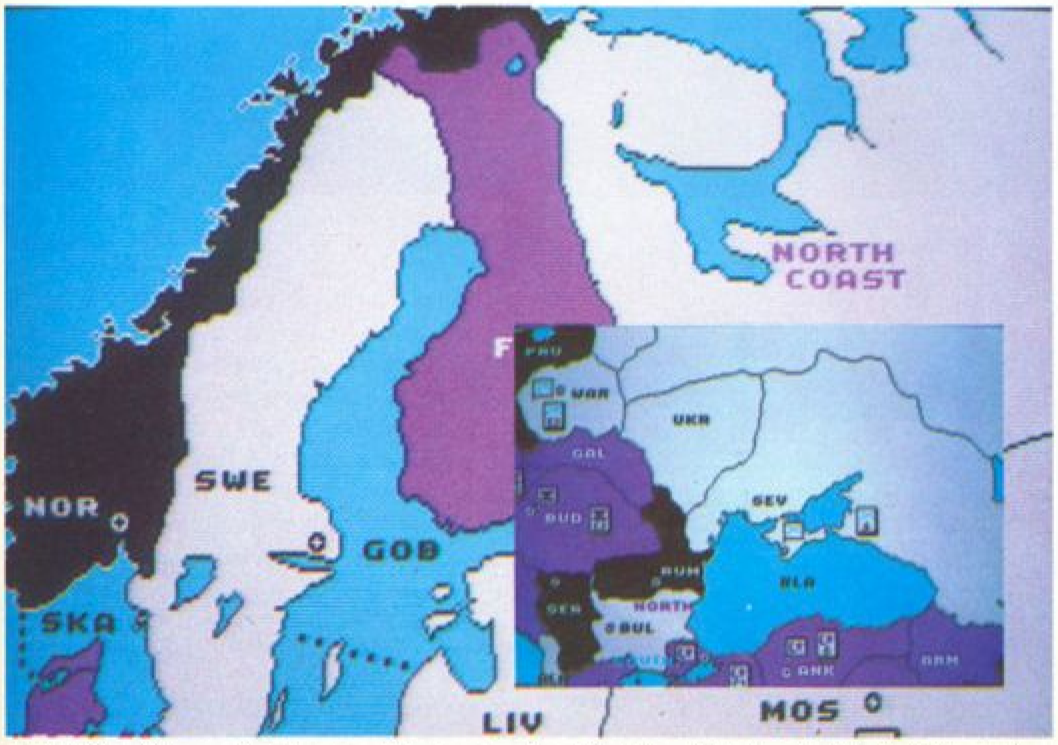
1 England: With no enemies to the north or west, you'll have plenty of time to build up your naval power. Your immediate spheres of interest are Scandinavia and the low countries, but your fleets could easily take the battle into the Med.

2 Austria-Hungary: Surrounded by enemies, you'll find it tough going just to hold your ground. Miracles aside, only negotiation or other people's stupidity can save your skin. A strong England can take the pressure off you, but there's still Turkey to deal with.

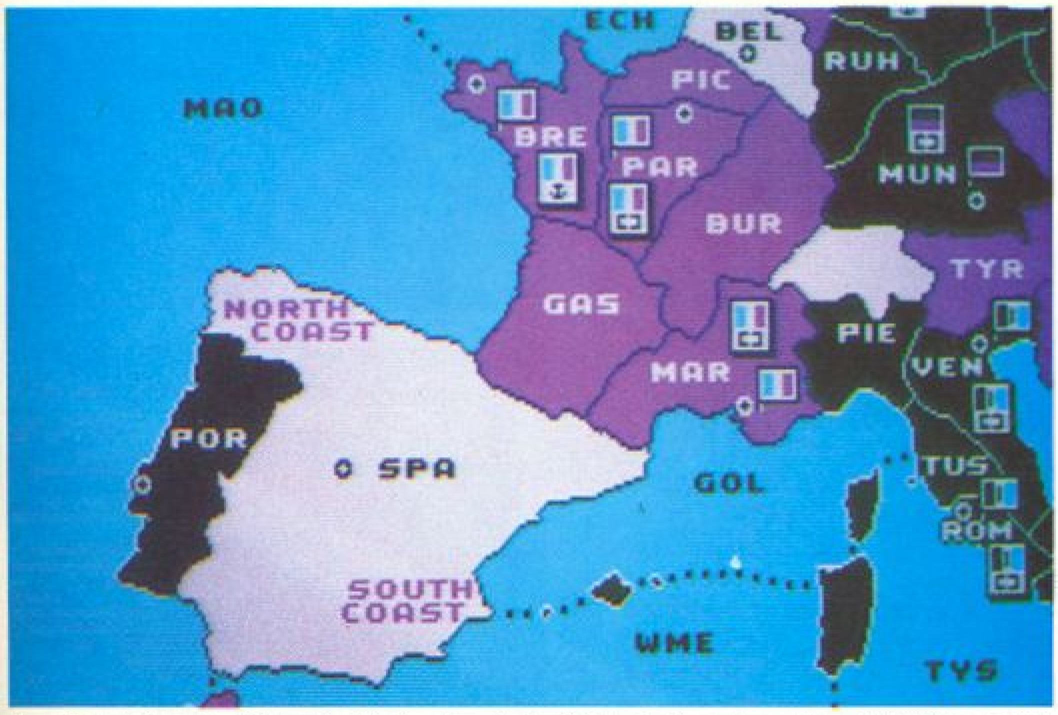
3 Germany: Holland and Denmark make easy pickings early on, but you may well have problems holding them. If the English head south that'll take some of the pressure off, but expect a Baltic war with Russia over who gets Sweden.

4 Italian: You should get Tunis early and might catch a piece of the Balkans action too, but it's hard work getting any further. Invading France is risky, but a beleaguered Austria-Hungary could make a good target.

5 Turkey: A very powerful country. If you get a good slice of the Balkans early on you can probably push on into Austria-Hungary, and cripple Russia into the bargain. A Russo-Austrian pact can be bad news, so you'll probably need a deal with one of the two.



Russia: Starting with four supply centres may sound great - everyone else starts on three - but the sheer size of Russia stretches even these resources dangerously. The Balkans (Inset), and Scandinavia (Main picture) are close at hand, but so are Turkey and England.



France: Spain and Portugal are both yours to start with, and you should get Belgium too. You may have problems with the Italian and English navies, but on land you should be able to hold your own.

Why computerise?

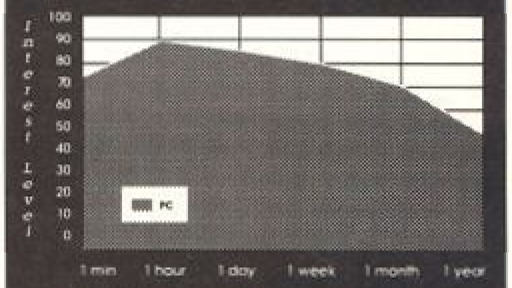
With many boardgames it's hard to see how computer versions improve on the cardboard originals. Very few computer opponents are in the same league as average human players – chess programs are a notable exception here – and in cases like *Scrabble* the computer isn't even playing on the same terms.

Computer *Diplomacy* is something of a special case however. Despite the admitted weakness of the computer opponents it offers, the game can make up the numbers and that's notoriously difficult.

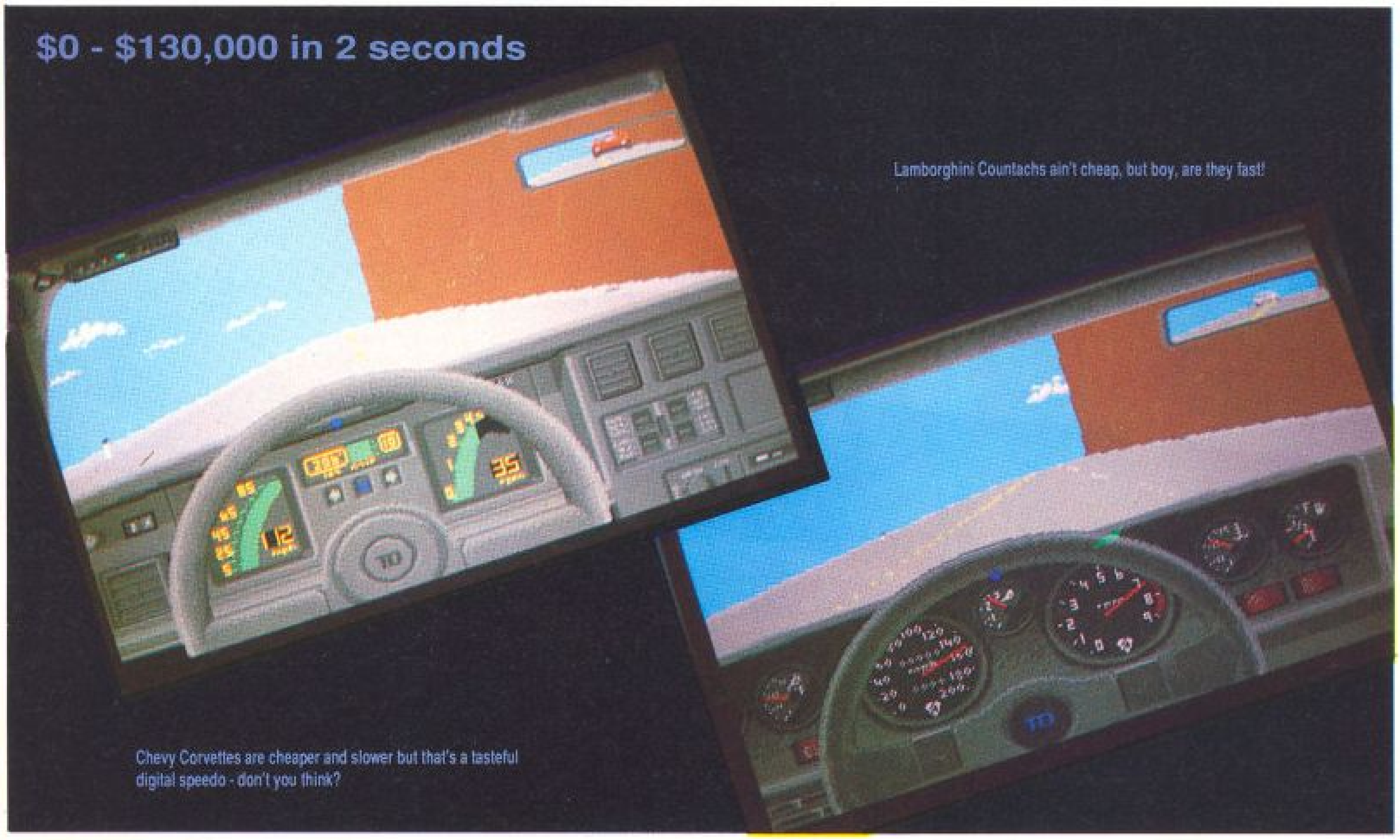
Bridge fanatics struggling for a foursome don't know how easy they've got it. Finding a full complement of seven for *Diplomacy* requires phenomenal planning, especially with games often lasting a day or two. It's rarely an easy matter finding even five or six players, so most casual games begin with at least one country in 'civil disorder' – a state of chaos where units have no orders, and will disband if attacked in force.

If that's the alternative, computer opponents are a godsend. They play a tenacious game in defence, and can put reasonable attacking strategies together too. They'll even form rudimentary alliances with each other where appropriate – on-screen messages keep you posted on these – though unfortunately there's no attempt at human-computer negotiation. Now that *would* have been interesting...

PREDICTED INTEREST CURVE



Rope other players in and the fun can last indefinitely.



$0 - $130,000 in 2 seconds

Lamborghini Countachs ain't cheap, but boy, are they fast!

Chevy Corvettes are cheaper and slower but that's a tasteful digital speedo - don't you think?

TEST DRIVE

ACCOLADE torque you in to the driving seat

RELIANT Robins will not be found alongside the Ferraris, the Porsches and the Lotuses in this latest variant on the 'drive a flash sports car' theme.

Having made rather a lot of money from your software company – the scenario goes – you've decided to splash out and buy yourself a car that is in keeping with your new found status. So off you've toddled to the local dealer (who can smell money a mile off) and he's agreed to let you take any car out for a test drive.

You've got five cars to choose from: Porsche 911, Ferrari Testarossa, Lamborghini Countach, Lotus Turbo Esprit and a Chevy Corvette. When you've made your decision you're placed behind the wheel and have to drive the car through five stages along a winding mountainous road.

Your view of the game is as if you were in the driving seat of the car looking through the windscreen. The road has a sheer drop on the left and a solid, steep bank on the right – remember they drive on the right in the States, so you drive with the steering wheel on the left.

Not only are you trying to keep your car on the road and in the right lane, but you also have to contend with on-coming traffic, Sunday drivers and the police. The local police are well aware that some people use this particular road to test fast cars and so they're always waiting with their radar guns to trap the unwary speedster (you). Should you get caught in a radar speed trap (a handy device attached to your sun visor flashes and emits a beep when it picks up a radar signal) you have to decide whether to try and outrun the 'smokies' or pull over and pick up a speeding ticket.

Control of the car involves pushing the joystick (or keys) forward to accelerate, back to brake and left-right for lateral movement. Pressing fire normally changes gear, but an optional shift pattern can be enabled and here you have to move the joystick as if it were the gear stick – care is needed here as slipping into the wrong gear at 140mph can have you in an awful lot of trouble.

If you manage to survive each stage without crashing more than four times per stage, and manage an average speed of about 60 mph for each stage, then you'll complete the course and have the chance to register your score. An average speed of below 50 or 60 will have the dealer reclaiming the car because he sees you as an incompetent driver.

It's exhilarating stuff, and each car performs differently – so once you've become familiar with one car, you can try and master another.

● Andy Smith

RELEASE BOX

C64/128	£9.95cs, £14.95dk	DEC/JAN
AMIGA	£24.95dk	OUT NOW
ATARI ST	£24.95dk	DEC/JAN
IBM PC	£24.95dk	DEC/JAN

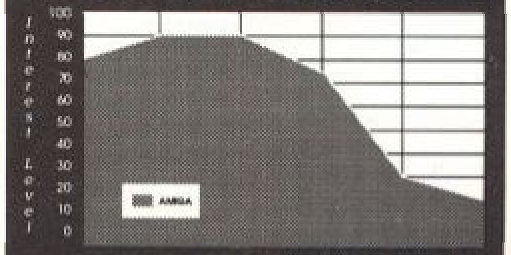
Amiga Version

The graphics are generally of a high quality, with each car's interior being particularly well drawn. Scrolling is a bit on the poor side though as the on-coming traffic tends to move rather jerkily. The sound is tremendous with screeches and whining engines throughout. Just sink into the leather and absorb the game's sheer driveability.

GRAPHICS	8	IQ FACTOR	6
AUDIO	8	FUN FACTOR	9

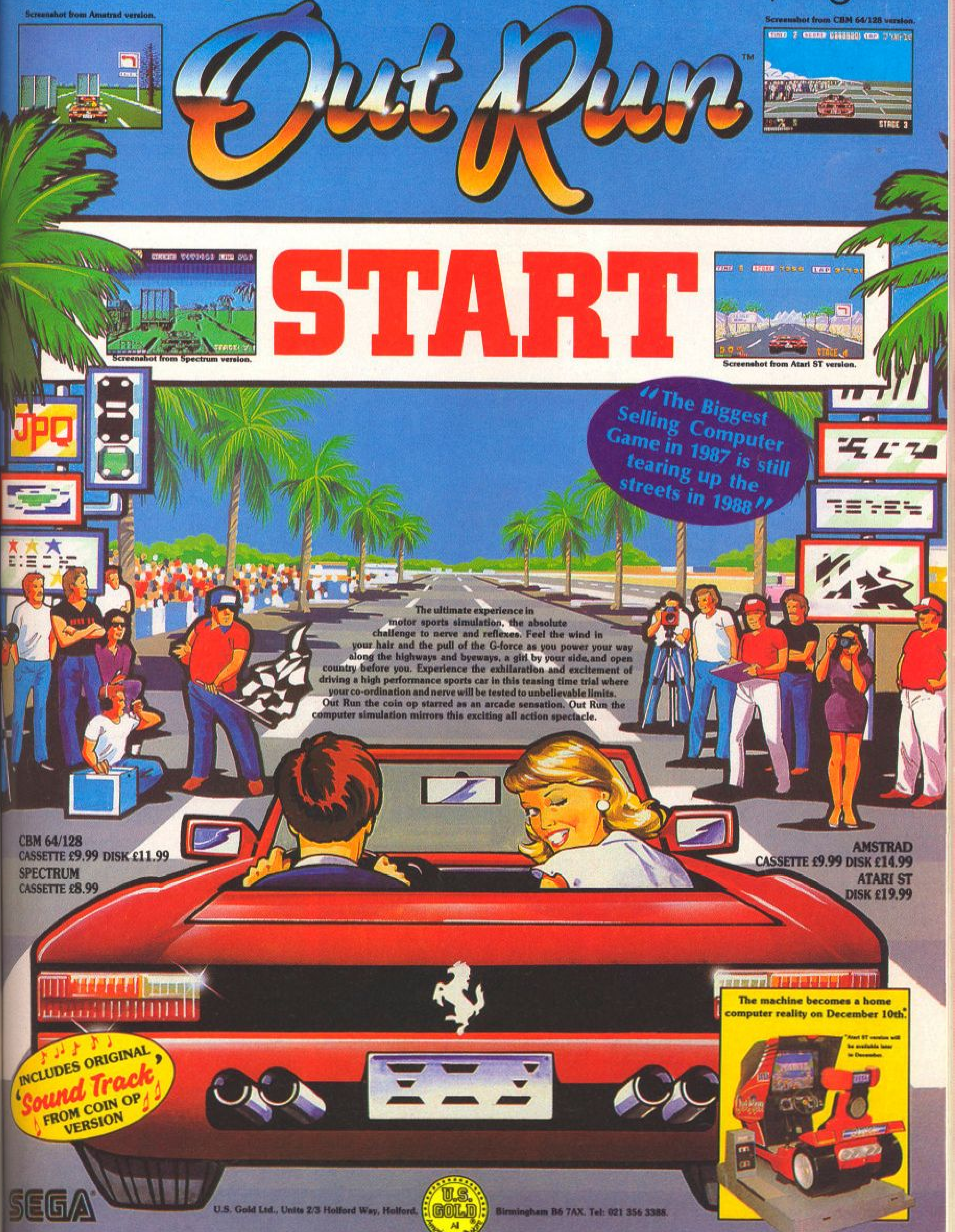
ACE RATING 826

PREDICTED INTEREST CURVE



The sense of speed grabs and holds you for some time, but there's a steep fall-off once you've mastered the controls and become familiar with the course.

You're cool, the engine's hot, the girl's gorgeous, a tank full of gas and an open road.... the rest is up to you..!



Screenshot from Amstrad version.

Screenshot from CBM 64/128 version.

Screenshot from Spectrum version.

Screenshot from Atari ST version.

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The machine becomes a home computer reality on December 10th.*

*Atari ST version will be available later in December.

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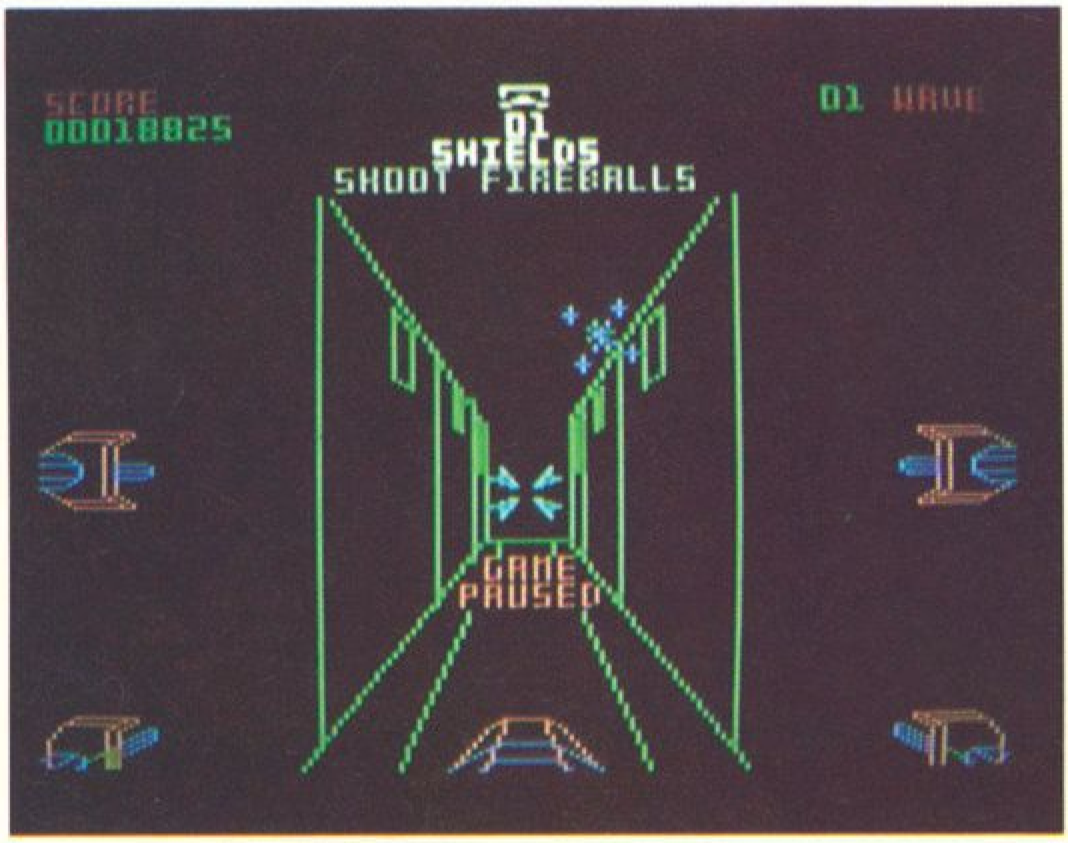
STAR WARS

DOMARK force their way in

IMPERIAL oppression rears its ugly head once again and this time the bad guys have got a battleship the size of a planet. Unsurprisingly, the rebels' answer is to send you out in a pint-sized fighter to take on the massed forces of badness (more or less) single-handed. All you've got to do is trash some enemy TIE fighters, blast the tops off a whole bunch of towers, fly the length of a heavily defended trench at top speed and hit a tiny duct at the far end. Piece of cake, right?

Well, yes it is actually now you come to mention it. In fact, for a full-price game in 1988 released across all major formats it's almost insultingly easy to see everything *Star Wars* has got to offer. That's not to say that it's a bad conversion from the cult vector graphics coin-op – far from it, in fact – but rather that the original is, to say the least, past it.

For a start, there are only three stages to the game. Once you've shot the TIE fighters, towers and that final duct it's round again for more of the same. You're meant to keep trying for ever higher scores – blasting the tops off all the towers, hitting that duct first time every time, and above all surviving longer – but where's the variety to keep you playing? Increasing difficulty levels might have cut the mustard four years ago when the original hit the arcades, but nowadays you're entitled to expect a little more.



C64: Flying down a rather jagged trench, with that exhaust port still some way off.

C64 Version

The C64 isn't a great 3D machine by any means so the slow, jagged wire-frame graphics - especially on the tower sequences - were only to be expected. The sloppy collision detection is harder to excuse, seriously hampering playability.

GRAPHICS	7	IQ FACTOR	1
AUDIO	5	FUN FACTOR	7

ACE RATING 475

ST Version

Nice soundtrack snippets and goodish graphics make this the most attractive version of the game, but it woefully underuses the ST's power. With solid 3D games like *Carrier Command* in the offing, wire-frame on the ST is starting to look decidedly tame.

GRAPHICS	6	IQ FACTOR	1
AUDIO	5	FUN FACTOR	7

ACE RATING 475

Amstrad Version

Again the obvious comparison is with *Star Strike* and again Domark's baby loses out. Though better defined, its graphics look slow and colourless compared to Real Time's gaudy, oh-so-playable oldie. My, hasn't the games industry come on in leaps and bounds.

GRAPHICS	6	IQ FACTOR	1
AUDIO	2	FUN FACTOR	7

ACE RATING 440

SpectrumVersion

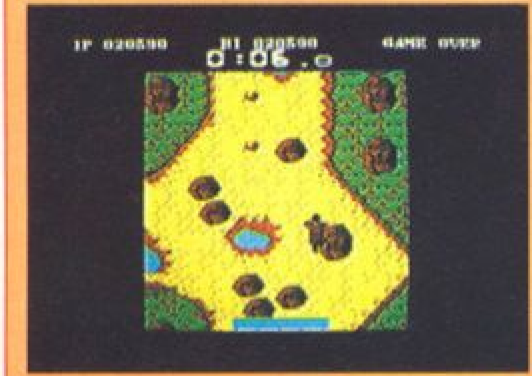
With Real Time's ancient *3D Star Strike* for competition, the Speccy version will have to do a bit better than this. The absence of sound effects on 48K machines is ludicrous, and the gameplay at best the equal of the three year old *Star Strike*.

GRAPHICS	6	IQ FACTOR	1
AUDIO	0	FUN FACTOR	7

ACE RATING 438

AFTER a very successful run in the arcades, *Combat School* has finally made it onto the home micro. The arcade version of this game was track-ball controlled but now it's waggle the joystick time, exchanging bruised hands (from slapping the ball) for aching wrists as you undergo seven gruelling tests of agility, strength and reflexes.

Combat School can be played by one or two players who compete simultaneously against either the computer or a friend. The first stage is an assault course that has you jumping over walls (of various heights) and swinging on 'monkey bars' before reaching the finishing line within the time limit. Next comes the first of three visits to the firing range – targets appear at regular intervals as you control a sight with the joystick and try to hit as many as possible in the time allowed. Then it's waggling again for the Iron Man race – a timed course full of boulders, mines and puddles to trip and slow your progress.



The gruelling Iron Man race – avoid the obstacles and waggle for all you're worth.

RELEASE BOX

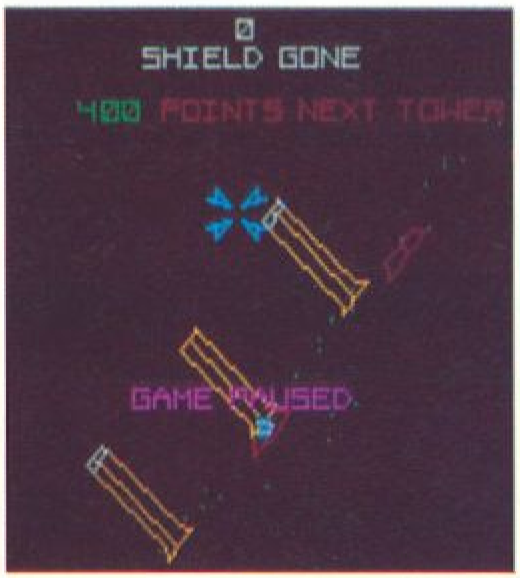
C64/128	£8.95cs, £12.95dk	OUT NOW
SPEC	£7.95cs	IMMINENT
AMS	£8.95cs, £12.95dk	OUT NOW

The last two challenges take the form of arm-wrestling (waggle for strength) and a hand-to-hand fight with your instructor. The

It's all very presentable stuff, you understand – the coin-op's been slavishly copied right down to the wire-frame lettering, and the ST version even has the original's sampled speech – but the biggest selling point must surely be the tie-in itself. If you really want a game called *Star Wars* then this has to be the one for you. If you'd prefer a game you'll still be playing in a year's time on the other hand, try looking elsewhere.

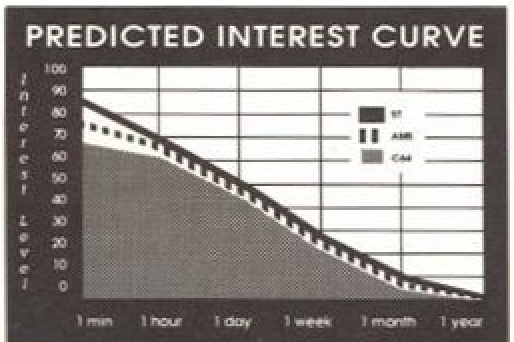
● Andy Wilton

RELEASE BOX		
C64/128	£9.95cs, £12.95dk	OUT NOW
AMS	£9.95cs, £14.95dk	OUT NOW
ATARI ST	£19.95dk	OUT NOW
SPEC	£9.95cs	OUT NOW



ST: Hit a tower and it'll roll you over – and lose you shields !

PREDICTED INTEREST CURVE



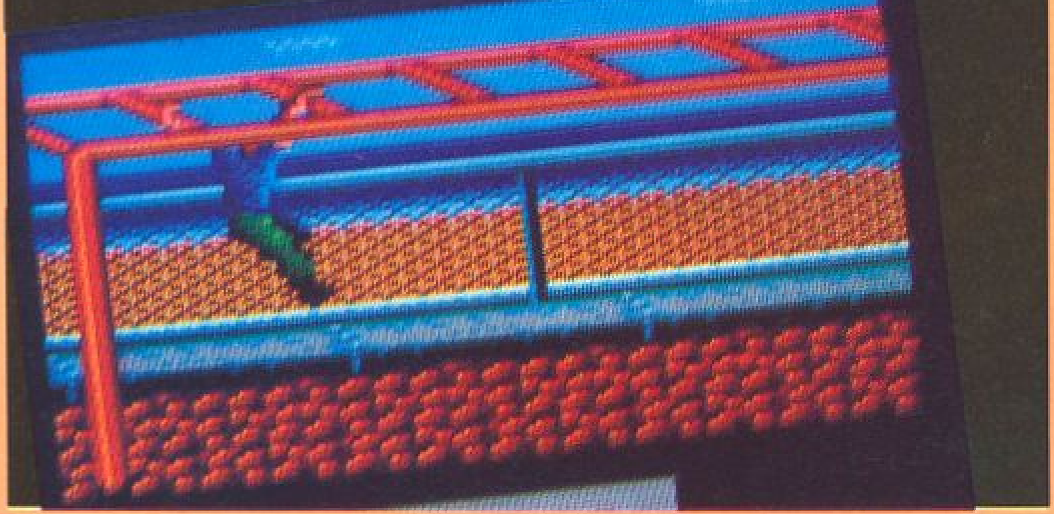
Initial differences aside, all versions are uniformly short on lasting interest.

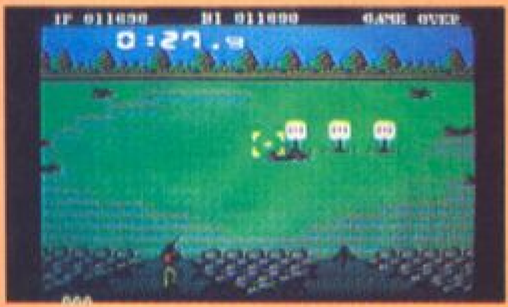
COMBAT SCHOOL

OCEAN wanna be your drill instructor

Ten - shun !!

Amstrad version – On the first leg and trying to swing across the monkey bars.





Your first visit to the rifle range. Make sure you hit enough targets or you'll have to suffer the chin-ups.

instructor's very hard to beat but joystick plus fire button give various combinations of kicking, punching, jumping, and dodging to help you win out here.

Should you fail to complete an event, you may (if you were very close to completion) get a chance to continue by performing a set number of chin-ups within a time limit – fail this and it's game over, succeed and it's straight into the next event.

Survive all seven events (the last event is a hand-to-hand fight against your instructor – who's no push over) and you may be selected for a special mission to rescue some hostages from the American Embassy. This mission is not against the clock but you'll have to use all of your new found skills in order to complete it.

Combat School is a very competent arcade conversion that is tough enough to make your arms ache and addictive enough to keep you coming back for the same punishment time and again.

● Andy Smith

Amstrad Version

Colourful and extremely playable, just as much fun on the Amstrad as on the Commodore. The multi-load poses no problems (you'll probably be glad of the rest) so get in training for a thoroughly enjoyable game.

GRAPHICS	8	IQ FACTOR	5
AUDIO	6	FUN FACTOR	8

ACE RATING 826

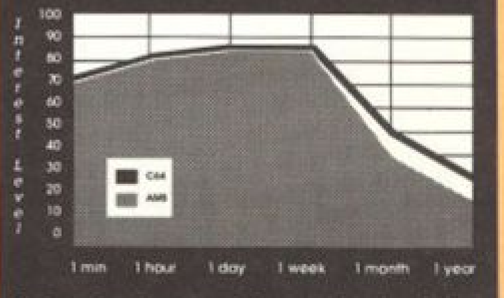
C64 Version

Make the most of the breathers between waggling bouts by listening to the wonderful music that's played throughout. The graphics are colourful and well drawn and animated. Though it's basically just an athletic game of the *Decathlon* variety, the scenario is different and the simultaneous split screen two player option adds another dimension, making this one of the more worthy arcade conversions.

GRAPHICS	8	IQ FACTOR	5
AUDIO	9	FUN FACTOR	8

ACE RATING 850

PREDICTED INTEREST CURVE



Both versions have very similar gameplay, though the multi-load on the Amstrad may see your interest waning slightly before the Commodore version.

HUNT FOR RED OCTOBER

Will ARGUS bring on their sub?

SOVIET submarine captains do not, as a rule, defect. You're an exception it seems, because you're trying to sail your boat *Red October* to the States. It's a pity you had to let your comanding officer know about this really, because now the entire Soviet Northern Fleet are on your trail.

You start the game in Arctic waters east of Iceland, and have to sneak or fight your way to the US coast. Using an icon system to access the sub's five main systems – sonar, periscopes, engines, weapons and map – and a pointer-driven set of steering and hydroplane controls, you have to navigate over undersea ridges and evade your angry compatriots.

Atari ST Version

Sound effects are good – especially the cavitation noise of the propellors – and the periscope view's impressive. There's good use of colour on the icon-driven front end too, but the pointer control is unreliable and clumsy at times.

GRAPHICS	7	IQ FACTOR	7
AUDIO	8	FUN FACTOR	2

ACE RATING 697

As well as getting to grips with the pointer system – a tricky business given how unresponsive the controls can be – you'll have to decide on a general fight-or-flight strategy. Attack is risky: raising your periscope or emitting an active sonar pulse will pinpoint your target for you, but it may also betray your own position.

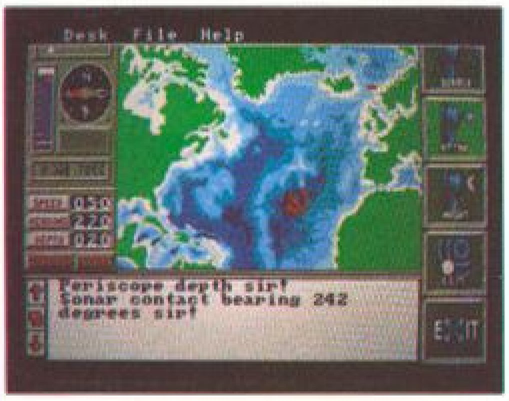
The traditional silent'n'deep approach has its problems too. Your boat's equipped with a special low noise transmission system for just this kind of tactic, but it means moving very slowly – and of course your pursuers are already aware of this top secret mechanism.

The game task is certainly big enough, and the playing area comprises the entire Atlantic Ocean, but getting involved in the action is hard and often tedious work. Icon and pointer systems were never meant for use in real-time games and this program, even more than *Star Trek* shows why they're such a bad idea. Delays as you fumble to switch between scopes, sonar and weapons have no counterpart in real submarine warfare, and don't really add to game interest either.

● Andy Wilton

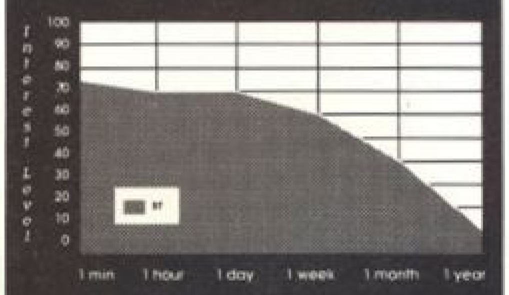
RELEASE BOX

ATARI ST	£24.95dk	OUT NOW
IBM PC	£24.95dk	IMMINENT
AMIGA	£24.95dk	IMMINENT



Periscope depth sir!
Sonar contact bearing 242
degrees sir!

PREDICTED INTEREST CURVE



Interest submerges steadily

MICROLEAGUE WRESTLING

MICROLEAGUE twist your arm

STRAP your boots on and step into the ring – it's time for some serious violence! The official World Wrestling Federation computer game is here, and giving people an elbow smash will never be quite the same again.

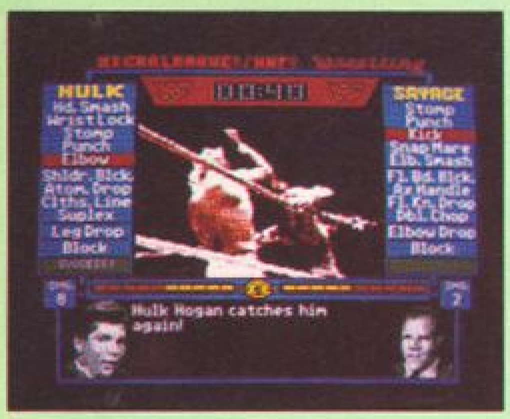
The WWF may not be a household name on this side of the Atlantic, but over in the States wrestlers like WWF champion Hulk Hogan have huge cult followings. With its unusual gameplay and emphasis on presentation this new import aims to sweep you away in a flood of 'Hulkamania'.

After extensive pre-match interviews and razzamatazz, the contestants enter the arena and the bout begins. Taking the role of either the clean-fighting Hulk himself or one of his more ruthless real-life opponents, you control your wrestler's strategy over 10, 20 or a punishing 60 minutes in the ring.

Your role in the bout consists simply of picking the next move. There's no co-ordination involved on your part: just choose a move from the onscreen menu and watch the results. Depending on various factors either your move or your opponent's will succeed – and then the fun *really* starts.

All action in the game consists of digitised shots from actual wrestling matches. When a move succeeds you'll see a rough movie of the subsequent action, with sampled sound effects for good measure. It's pretty brutal stuff in a cartoon violence sort of way, but great fun too. The computer doesn't put up a tremendous fight and you may well beat it first time out, but (as in real-life wrestling) the show's the thing. Press H for Hulk to appeal to the crowd! Press S for Savage to pull a dirty move while the ref isn't looking! Who could ask for more?

● Andy Wilton



Hulk Hogan catches him again!

Atari ST Version

Great use of digitised graphics, a witty commentary line and some lovely crunch-thwack sound effects all go down a treat, but ST drive capacity means you'll have to switch disks to get Hulk v. Paul 'Mr. Wonderful' Ormdorff.

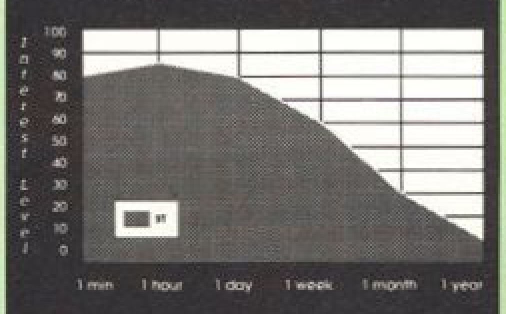
GRAPHICS	8	IQ FACTOR	1
AUDIO	7	FUN FACTOR	9

ACE RATING 740

RELEASE BOX

ATARI ST	£19.95dk	OUT NOW
C64	UNDECIDED	IMMINENT

PREDICTED INTEREST CURVE



Even Hulkamania wears off eventually.

GRYZOR

OCEAN Lance the aliens

FEELING cold, are we? That's those nasty Durrs from the planet Suna of course, altering our weather patterns to suit their evil ends. It's a simple plan really: they bring on another ice age, human civilisation grinds to a halt and the alien rotters take over Earth from the comfort of their jungle HQ. Who can possibly stop them?

You can, of course, but as tough guy Lance Gryzor you've got a daunting mission ahead of you. Side-on view screens of multi-level blasting action in the jungle are packed with hostile gun turrets and enemy marksmen, so you'll have to master the game controls quickly. Leaping up and down, crouching to shoot and firing directly upwards are simple stuff, but firing in mid leap or blasting diagonally on the run may take a bit more joystick drill.

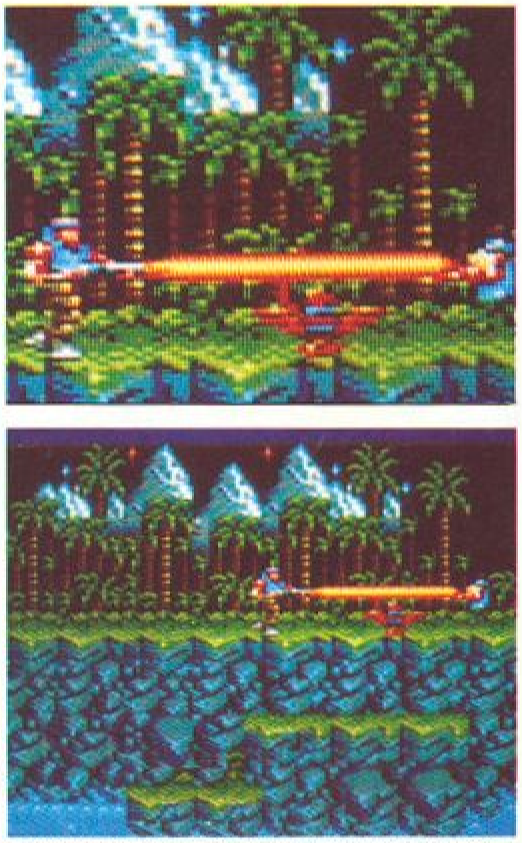
Firing at odd angles and dodging hostile bullets are vital skills, what with the strength and nature of the opposition. You'll usually need to get several hits in on a gun turret to destroy it, avoiding return fire and android footsoldiers the whole time. Timing and dexterity count for a lot here, but as you learn the game layout you'll find that entering the next screen on the right level smooths the way a good deal.

You'll also learn the position of the game's many extra weapons caches, and these make a phenomenal difference. The laser takes out multi-hit opponents with one shot, the scatter gun cleans out nasties without putting you in danger and the rapid fire machine gun cuts simplifies shot timing enormously. All three of these are available from the 'weapons eagles' released when you shoot certain static or moving targets, but you're back to the boring old start-up gun every time you die.

RELEASE BOX

C64/128	£8.95cs, £14.95dk	IMMINENT
SPEC	£7.95cs, £12.95dk	IMMINENT
AMS	£8.95cs, £14.95dk	OUT NOW

Blast, leap and run to the end of the jungle section and the action moves indoors. In a series of forced perspective screens viewed from behind Lance's back you've got to dodge bullets and leap over barrels to stay alive, while blasting away at security consoles. These control forcefields which block your path: wreck them, the defence systems pack up and you can dash to the next stretch of corridor. Some consoles are so high up you'll have to leap and shoot simultaneously, while others only appear after you've shot preliminary targets.

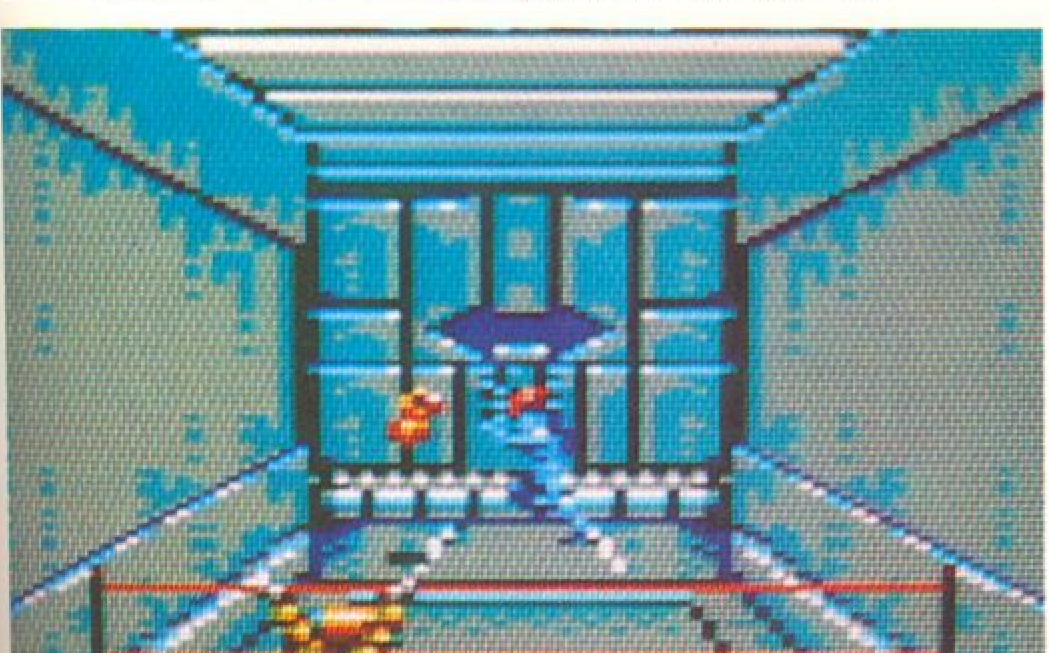

Amstrad: the laser's impressive, but on level 1 you'll find the scatter gun more useful. Collect the 'eagle' to arm up!

Make it to the end of the corridors section within the time limit – you'll lose a life for every minute you overrun – and you're up against a terrifying challenge: the computer room. Here you must blast four coloured panels on the computer, knock out six defensive guns and then deal with a last-ditch defensive cannon to wreck that mainframe.

The action continues for another three sections of jungle platforms, corridors and computer room but only the very toughest will make significant inroads here. The first computer room is murderously difficult, and an extra life at the end of each section is small compensation. There's worse to come, but it'd take you weeks of effort to see for yourself just how much worse.

There's certainly a task here that's a match for even the greatest gamesplayers, but Ocean are treading a fine line here. Later levels are so tough that it's easy to be discouraged. Enormous leaps in difficulty make money for coin-ops alright, but they're not always what the home market needs.

● Andy Wilton


Amstrad: there's a force-field in your way on this screen from level 2. Blast the defence system beyond it and you'll clear your path.

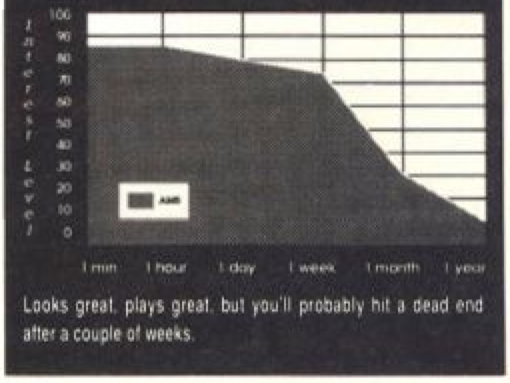
CPC Version

These really are CPC graphics at their very best; the colours positively glow, and animation is excellent. Multiload will inevitably annoy 464/664 users somewhat, but 6128 owners get the whole game loading at once.

GRAPHICS	10	IQ FACTOR	2
AUDIO	5	FUN FACTOR	8

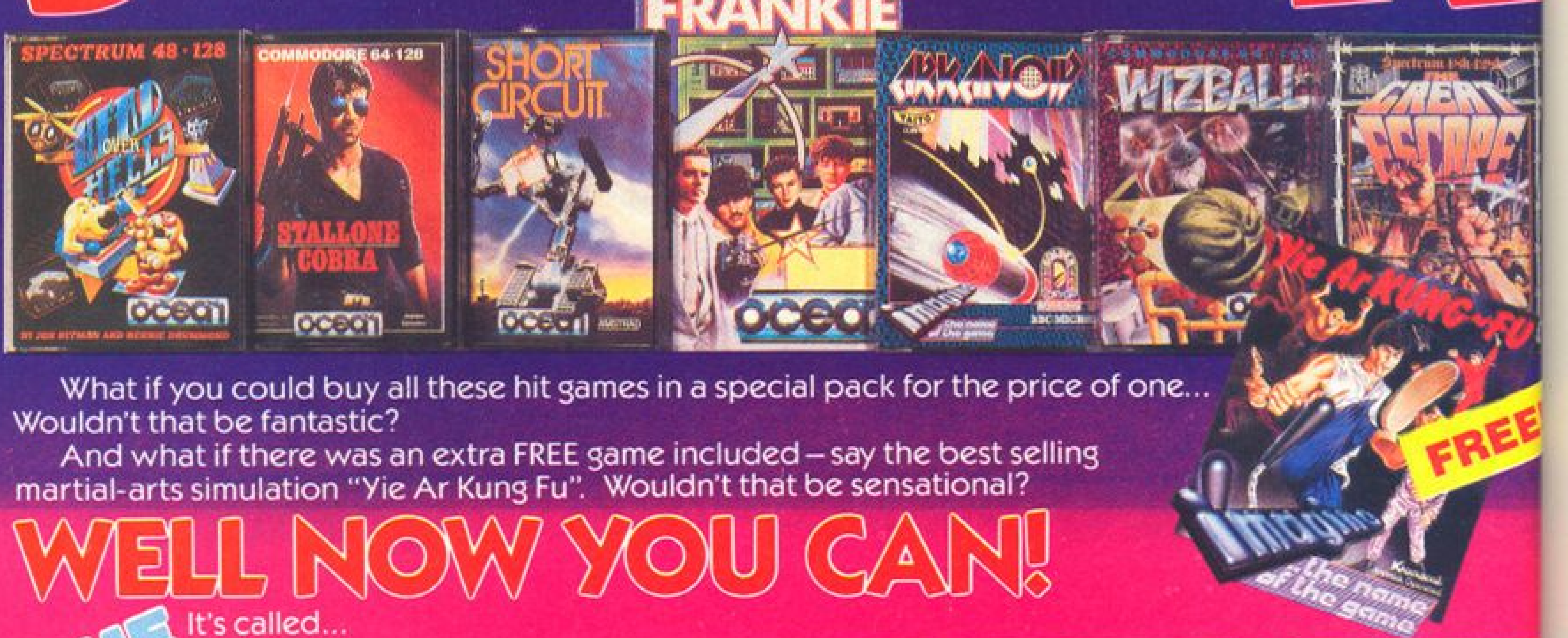
ACE RATING 771

PREDICTED INTEREST CURVE



Looks great, plays great, but you'll probably hit a dead end after a couple of weeks.

JUST THINK

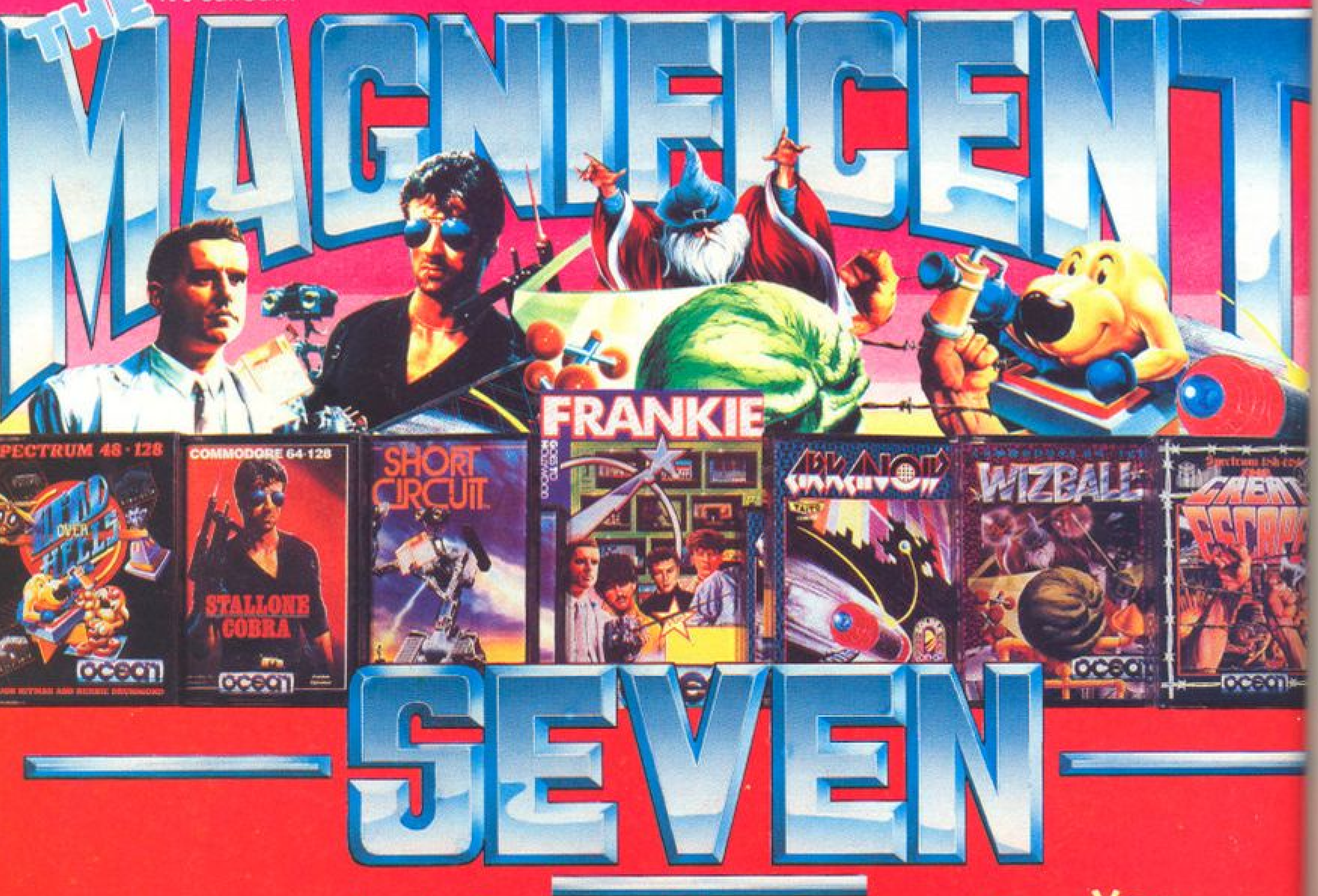

FRANKIE
SPECTRUM 48 · 128
HEAD OVER HEELS
COMMODORE 64·128
STALLONE COBRA
SHORT CIRCUIT
ARKANOID
WIZBALL
GREAT ESCAPE
Yie Ar KUNG-FU
FREE
Imagine the name of the game
ocean

What if you could buy all these hit games in a special pack for the price of one... Wouldn't that be fantastic?

And what if there was an extra FREE game included – say the best selling martial-arts simulation "Yie Ar Kung Fu". Wouldn't that be sensational?

WELL NOW YOU CAN!

It's called...


THE MAGNIFICENT
FRANKIE
SPECTRUM 48 · 128
HEAD OVER HEELS
COMMODORE 64·128
STALLONE COBRA
SHORT CIRCUIT
ARKANOID
WIZBALL
GREAT ESCAPE
ocean
SEVEN

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WESTERN GAMES

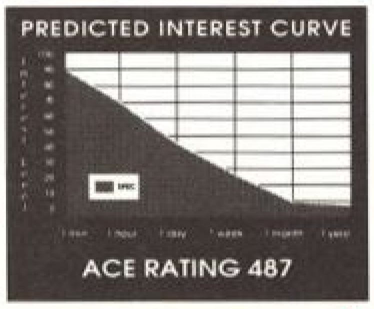
MAGIC BYTES go west

MILKING cows and dancing on stage are odd events for a waggling game to have at all, but when the participants are cowboys rather than athletes you just know someone's trying to be funny. These are the silliest (and toughest) events in this spoof six-eventer, but with bean-eating and beer-shooting on the list things don't get much saner.

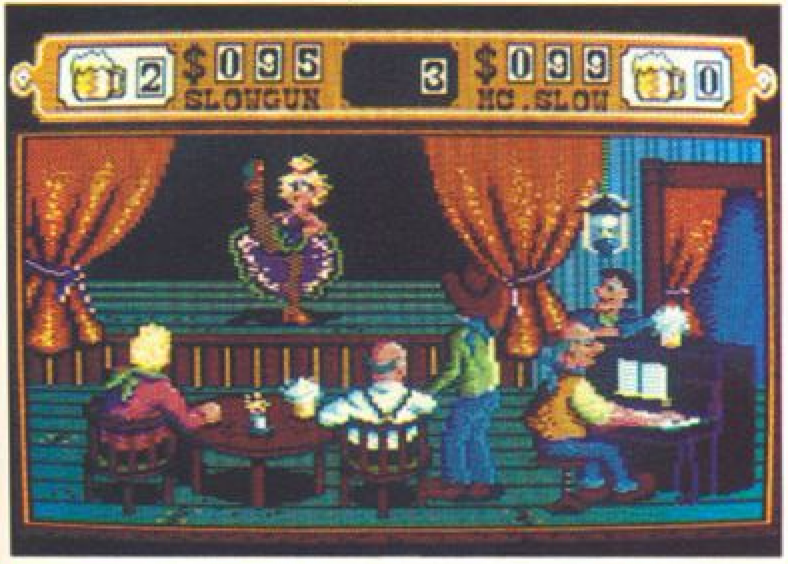
The graphics are packed with comic touches and there's plenty to laugh at first time through, but the sports parody's too accurate for the fun to last: strange joystick movement patterns and bursts of waggling really can't pass for gameplay any more – can they?

● Andy Wilton

RELEASE BOX		
C64/128	£9.99cs, £12.99dk	OUT NOW
AMS	£9.99cs, £14.99dk	OUT NOW



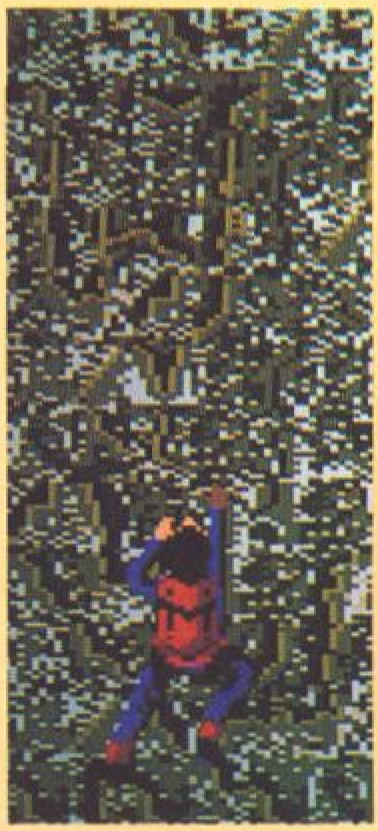
ACE RATING 487



CHAMONIX CHALLENGE

INFOGRAMES climb peaks

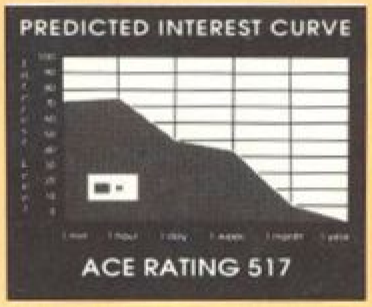
RELEASE BOX		
ATARI ST	£19.95dk	OUT NOW
AMS	£9.95cs, £14.95dk	IMMINENT
C64	£9.95cs, £14.95dk	IMMINENT



ERIC Escoffier, the world famous mountaineer, has loaned his name to Infograme's latest release. It's a 'waggle the joystick to climb the mountain' game which requires precise timing and concentration to complete your chosen climb (you have a choice of six)

You have to prepare your climber properly before you start the ascent however as he could freeze to death, go snowblind or catch sunburn. *Chamonix Challenge* has a novel scenario and some colourful and well animated graphics but it has poor gameplay and unless you're a real fan of the sport you could well find the fun wearing off quickly.

● Andy Smith



ACE RATING 517

INSANITY FIGHT

MICRODEAL scroll vertically

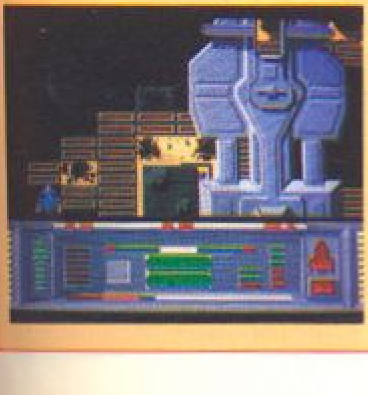
VERTICALLY scrolling shoot-em-ups are ten a penny on most machines, but not on the Amiga - especially shoot-em-ups that are playable as well as pretty.

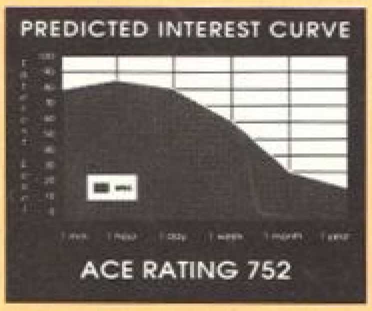
The player takes charge of a spaceship (viewed from above) and has to fly over a down scrolling landscape and destroy the various installations.

Insanity Fight wins no prizes for originality but it's very good looking and sounds superb. Moderately addictive and tough enough to keep you going for some while.

● Andy Smith

RELEASE BOX		
AMIGA	£24.95dk	OUT NOW





ACE RATING 752

CHOPPER X

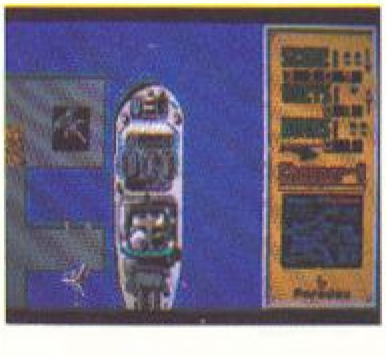
Rotoring with MASTERTRONIC

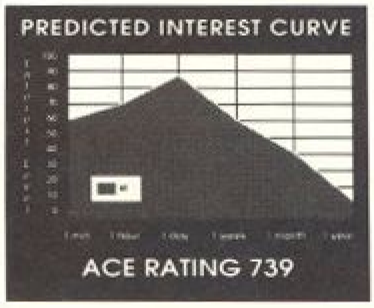
FERG'S the name, flying a Heward XX66 Assault Helicopter's the game – or so the blurb accompanying the game goes.

It's a vertically scrolling shoot-em-up, viewed from above, that has the player controlling a helicopter in an attempt to destroy huge numbers of tanks, boats and gun emplacements. Scrolling's poor and the landscapes are somewhat bare, but it's an enjoyable game with a moderate amount of addiction.

● Andy Smith

RELEASE BOX		
ATARI	£9.95dk	OUT NOW





ACE RATING 739

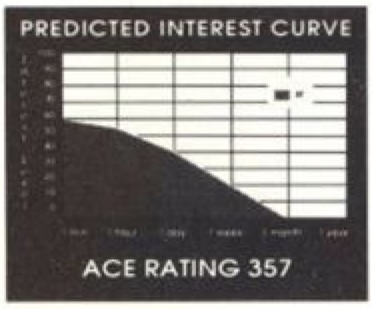
GALACTIC GAMES

Heads fly at ACTIVISION

HERE'S a novel variation on an old theme. It's a sports simulation broken down into five events including: 100m slither, space hockey, head throwing, psychic judo, and the metamorph marathon.

It's a nice idea that unfortunately just doesn't work too well; the games are simple, unexciting and tedious to play. Graphics are very straightforward with little detail and the sound is certainly nothing to crow about. Try before you buy.

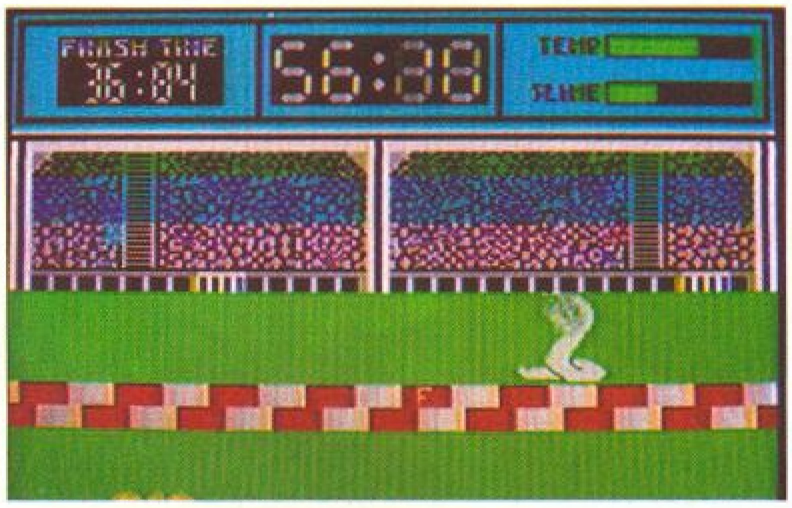
● Andy Smith


PREDICTED INTEREST CURVE

ACE RATING 357

RELEASE BOX

C64/128	£9.99cs, £14.99dk	IMMINENT
SPEC	£9.99cs	OUT NOW
AMS	£9.99cs,	IMMINENT



FRANTIC FREDDIE

TOP TEN go up the pole

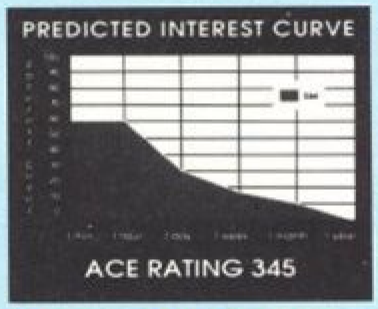
GREEBLIES are what drive poor Frantic Freddie up the pole as he greedily tries to grab all the crocks of gold in the magical telephone system he has fortuitously stumbled across.

Like its scenario, Frantic Freddie is a pretty tired game; there's a modicum of fun to be had as you scramble up and down the ladders to avoid the grumpy Greeblies, but at heart it's just an old platform game in budget shape.

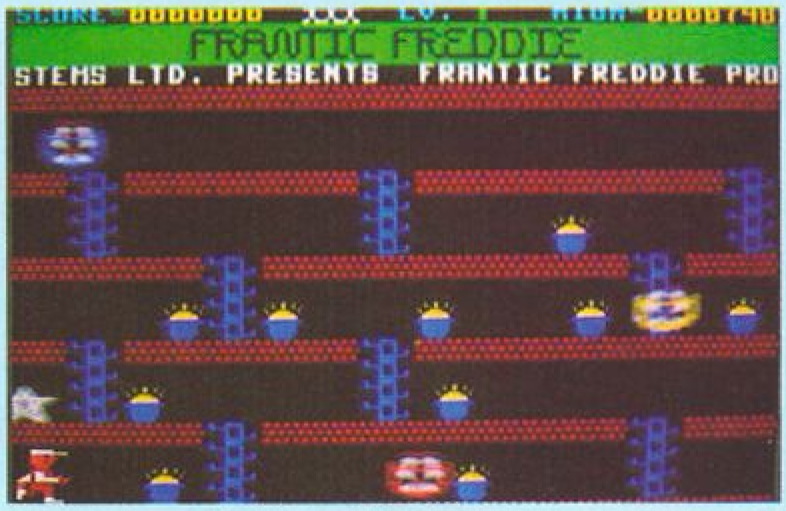
● Pete Connor

RELEASE BOX

C64/128	£1.99cs	OUT NOW

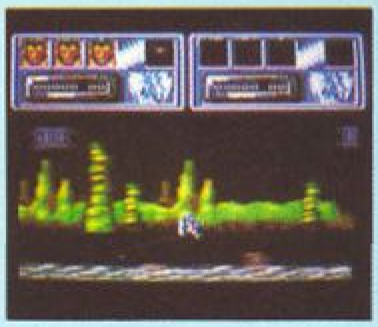

PREDICTED INTEREST CURVE

ACE RATING 345



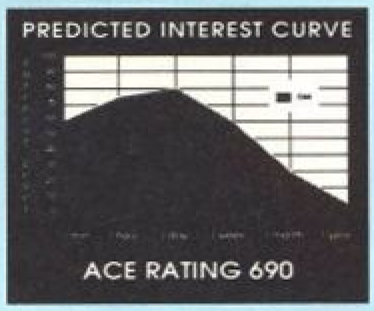
JET BOYS

CRL send the jet boys round



RELEASE BOX

C64/128	£9.95cs, £14.95dk	OUT NOW
SPEC	£9.95cs, £14.95dk	OUT NOW
AMS	£9.95cs, £14.95dk	OUT NOW


PREDICTED INTEREST CURVE

ACE RATING 690

SPACE age coppers are known as jetboys, who patrol the mining quadrants on the moons of Saturn. But the System Council boobed by selling one of the moons to a crook, who threatens to blow the moon up and so destroy all the other moons as well. Yes, it's down to you to stop him.

This one or two player game has the player(s) flying over a parallax scrolling landscape through four levels. Each level is swarming with aliens that attack in formation, and has a guardian monster at the end.

The one player option is not particularly good but in two player mode with its simultaneous action it can be enjoyable for a while.

● Andy Smith

BAD CAT

Street cred cats from GO!

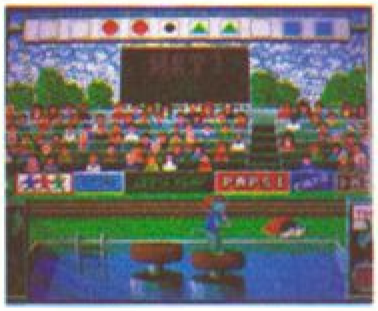
TAKE yer average furry feline, dress him in a denim cut-off jacket, headband and give him some shades to wear and you'll have some idea of the hero of *Bad Cat*

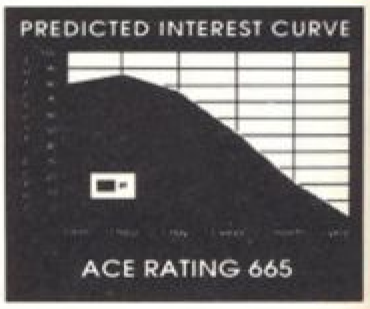
The game consists of four levels and can be played by a maximum of four people (turns alternate). It's a positioning game for some of the levels as you try to cross an assault course and a timing game for the rest as you try to knock your opponent over with bowling balls or leap from pads located in a swimming pool to hit overhead symbols. Cute graphics, adequate sound and moderately addictive gameplay make for a game with a higher novelty value than compulsion factor.

● Andy Smith

RELEASE BOX

ATARI ST	£19.99dk	OUT NOW
C64/128	£9.99cs, £11.99dk	IMMINENT
AMIGA	£24.99dk	IMMINENT




PREDICTED INTEREST CURVE

ACE RATING 665

A mixed but tasty bag of version updates this month. The real biggy is, of course, *Bubble Bobble* on the ST. Its massive rating is justified by its awesome playability and very pretty graphics. Should keep ST owners busy on these long winter nights.

Worth looking out for, too, on the 16-bit side is the Gauntlet-ish *Eagles's Nest,* weighing in with over 900 on both ST and Amiga.

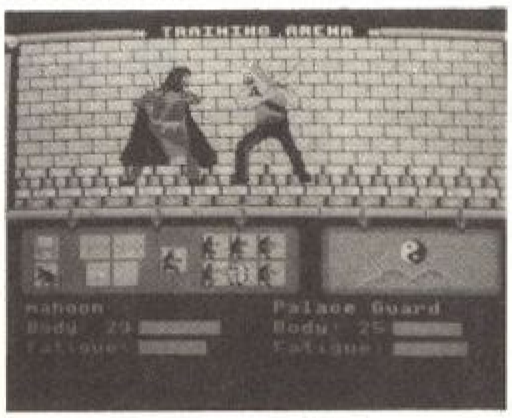
And big news on the C64 front is the arrival of the infuriatingly addictive *Deflektor.* Not a bad old month, is it?

AMIGA

MOEBIUS

Origin systems/Microprose £24.99dk
C64 version reviewed Issue 2 – ACE Rating 628

The Oriental role-playing game finally makes it to the Amiga. It's very similar in feel to the C64 version and plays identically. Superior graphics and sound and improved gameplay make this a slightly better game on the Amiga however, and the increased score reflects that.



- ACE RATING 655

EAGLE'S NEST

Pandora £19.95dk(Also Atari ST at £19.95 dk)

One of the better *Gauntlet* clones for 8-bit machines is just as playable on 16-bit machines. Both versions are colourful and play identically to each other. The Amiga's graphics are not significantly better than the STs but the sound certainly is. If you like the *Gauntlet*-style games then you won't be disappointed with *Eagle's Nest*.

- ACE RATING 900 (AMIGA)
- ACE RATING 904 (ATARI ST)

AMSTRAD

PHANTOM CLUB

Ocean £8.95cs £14.95 dk
Spectrum version reviewed Issue 4 – ACE rating 845

The Amstrad version of the *Movie* sequel is as playable and as colourful (if not more so) as the Spectrum version. Gameplay is identical and the missions are just as tough to complete. Will keep the keen adventurer busy for a long time.

- ACE RATING 645

YOGI BEAR

Piranha £9.95 cs £14.95 dk
C64 version reviewed in Issue 3 – ACE Rating 752

Jellystone Park is just as colourful on the Amstrad as it is on the C64 and that thar trapper has still got hold of 'ol Boo-Boo. With instant appeal to younger games players especially *Yogi Bear* retains its intial rating.

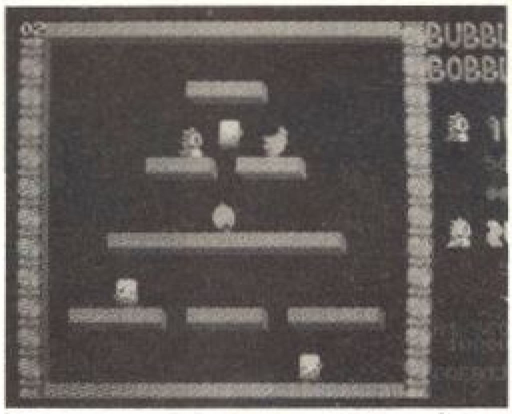
- ACE RATING 752

ATARI ST

BUBBLE BOBBLE

Firebird £19.95 dk
C64 version reviewed issue 1-ACE Rating 958

A very lively game taking advantage of the Atari ST's smooth movement and speed making the game pleasant to play and the best conversion of the Taito hit.The animation of the ST complements the colourful sprites and the 100 screens,each with their own pattern of play.The music is simple for the ST, but lively – livelyness being the key word in describing this arcade hit.



- ACE RATING 958

LIVINGSTONE, I PRESUME?

Alligata £14.95 dk

This witty jungle arcade adventure has the player struggling through seven levels in the attempt to locate the lost explorer. Cutesy graphics that are well animated add flavour to the game, and if you like your adventures in the *Jack The Nipper 2* mould, then you'll get a lot of enjoyment from this game.

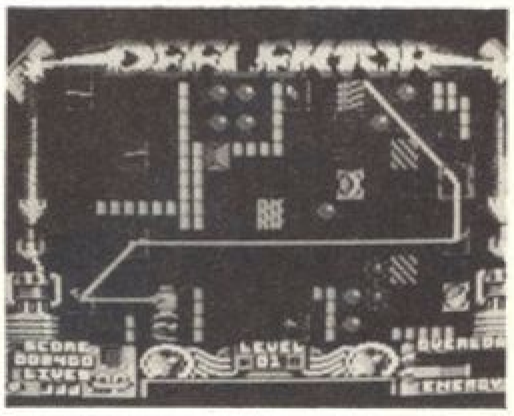
- ACE RATING 837

C64

DEFLEKTOR

Gremlin £9.99 cs £14.99 dk
Spectrum version reviewed ACE Issue four – ACE Rating 906

Well, they've cleared up the cursor problem (as reported in ACE 4) and the game is a treat to look at and listen to. As compelling as ever, the C64 version is just as addictive and just as frustrating as the other versions.



- ACE Rating 906

SPECTRUM

ACE 2

Cascade £8.95 cs (48k) £9.95 dk (128k)
C64 version reviewed ACE Issue 2 – ACE Rating 590

The gameplay hasn't improved any and the graphics are worse making *ACE 2* a very avoidable game on the Spectrum. Again the lack of opponents and the limited cockpit view fail to compensate for the lack of realistic controls.

- ACE RATING 530

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OR

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CRASH LANDING!

So you wanna earn your wings, eh, buddy? Feel the urge to climb into the cockpit and roar off into the empty skies? Then you're in good company – flight sims are amongst the most popular micro applications, but sometimes they'll let you down with a bump. ACE spots the aces...

A flight sim can be the most frustrating purchase you'll ever make for your computer. The promise is tremendous and so, all too often, is the disappointment – a program that's either so complex it's impossible to use, or so rudimentary that you fall asleep at the keyboard. If you really want to conquer the skies, join us in a spot of formation flying as we 'buzz' a few of the contenders for your cash.

Despite the glamour of flight, one of the main problems with a flight simulator is pure boredom. Imagine a driving simulator that allows you to drive a Ferrari. Once you've mastered the gears, the brakes, and the steering you're going to want to do more than zip up and down the country lanes. Tarmac-bashing games give you more in a dozen different ways, from the racing scenario of Out Run to the chase and chivvy of Spy Hunter.

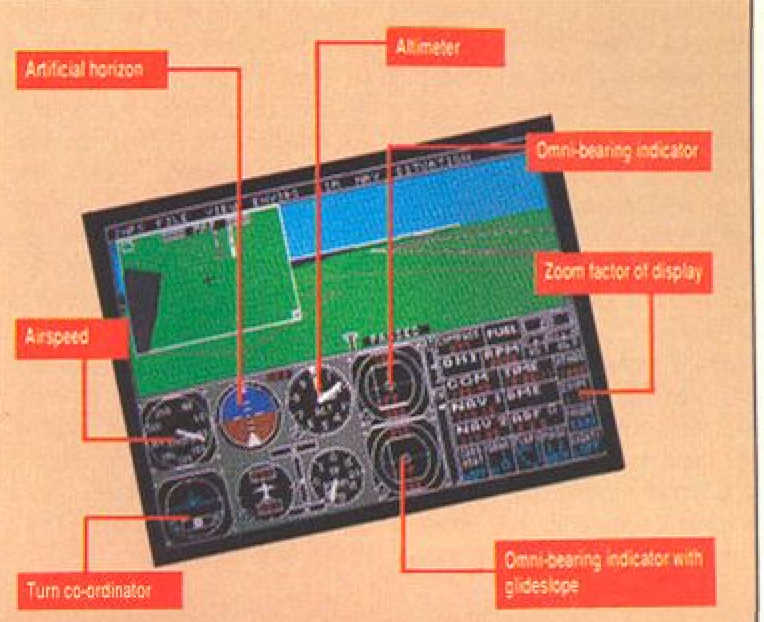
In a plane, however, things are a little different. First, you've got rather more than gears, brakes, and steering to worry about and there's a danger of loss of interest during this lengthy learning curve. Secondly, once you're up in the air what do you see? Answer: nothing but sky, unless you look down at the ground and producing convincing aerial views of landscape is not an easy thing to do on a micro.

The way in which flight simulators have tackled these problems determines what sort of program you get and whether you're going to buy it and fly it, or buy it and bin it.

First, there are the 'added challenge' games. These offer typically either varied flying assignments (e.g. different airfields to land and take off from) or combat possibilities in an effort to keep the 'pilot' interested. Then there are games that try to overcome the learning problem, either by bypassing it (making the program more simple) or by trying to make a virtue of it (making things more complex and 'authentic'). Finally (and more recently) there are the programs that have tackled the aerial view problem and attempted to enhance the appearance of the ground beneath you, thereby giving you something to find, to look at, and to avoid crashing into!

In addition to the style of the program, you should also give some thought to what you want to fly. Typically, programs available cover jets, light aircraft, and helicopters. Jets are the easiest to fly and unless there is a good deal of added interest you may find things a bit dull after a while. Light aircraft, on the other hand, can be very twitchy in the air but do give you a great sense of achievement when you can control them properly. Finally, helicopter simulations tend to concentrate very much on the attack and destroy scenarios, since the aircraft themselves do not offer much in the way of aerobatic challenge or landing/takeoff disciplines.

The very best games combine varied flight options, combat possibilities, realism coupled with careful tuition, and a pretty landscape to fly over. Find a game like that and you've found one of the most satisfying entertainment programs you're likely to buy.



FS2: (ST version) Cockpit display as you come in to land. Numerous control options include the ability to position your plane anywhere in the sky – useful for setting up practise landings. Note the drop-down map menu, showing your position. Thirty five different instruments and read-outs give unrivalled opportunity for controlling your aircraft.

FLIGHT SIMULATOR 2

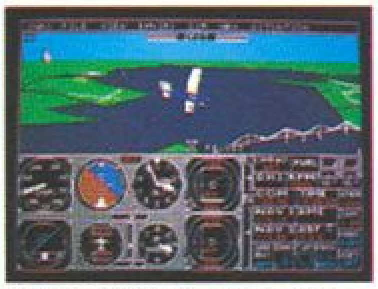
SubLogic

Atari ST	**£49.95dk**
IBM PC	**£49.95dk**

- Cessna 182 trainer; Gates Learjet

Well, there's no doubt about it. When it comes to serious flying, as opposed to combat, this program is deservedly the standard by which all other flight simulators are judged. The latest version offers a solid 3D landscape together with 120 airports in five different areas ranging from San Francisco to New York, plus a whole host of other features that any experienced pilot would like to see but not expect to find on a home micro.

The choice of plane is important. Jet simulations tend to be rather easier to fly for the beginner and in addition they obviously move quite a bit faster. The Cessna, by contrast, is a somewhat twitchy creature but this is more than compensated for by the excellent control which scans keypress rates and makes either a 'micro adjustment' or a normal control adjustment to the elevator position according to how fast you tap the keys. This is much closer to the feel of actually flying a small plane than the normal, very coarse control offered by other programs.



FS2: (ST version) One of several different view options: here you can see your Cessna banking over the Golden Gate Bridge, prior to returning for landing at Oakland International Airport. You can even zoom the displays to take a closer look at the scenery.

The jet is extremely easy to fly, and also rather boring, but you can pull some nice stunts with it without worrying about your life insurance. Best option of all, however, is the World War I ace simulation. This is really just the Cessna with a gun on its front, but it's still very enjoyable as you confront the 'enemy' on a small, intimate landscape. Gain points by bombing his factories and shooting down his six pilots, each of whom shows different tactics. Don't expect to come out victorious, however, until you're really mastered control of your aircraft.

And that's really what this program is all about – mastering every aspect of flying, from navigation (there are extensive radio and visual navigation opportunities) in a micro-environment that includes almost every conceivable variable from cloud height through turbulence to icing hazards. You can even fly under the Golden Gate Bridge, but antics apart, the program will leave those who persevere and master it with an unrivalled sense of achievement.

Display quality	9
Sound	4
Instrumentation	10
Documentation	7
ACE Rating	9

FALCON

Spectrum Holobyte/Mirrorsoft

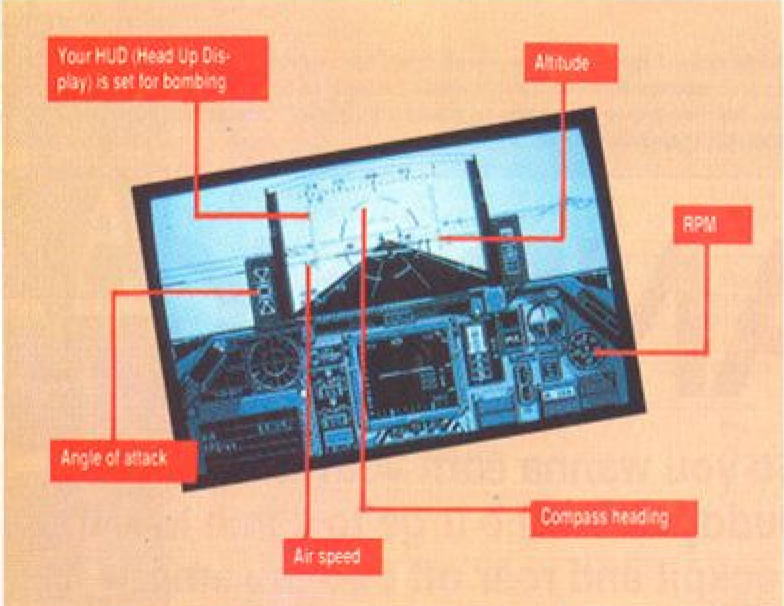
Apple Mac	**£29.95**
IBM PC	**£29.95**

- General Dynamics F-16A

This game falls squarely into the 'up-

and-at-em' category of flight sim and comes close to doing for combat simulation what Flight Simulator 2 does for light aircraft training. The 140-page manual has scant coverage of flying techniques but is positively bristling with authoritative details on weaponry, air combat manoeuvres, and the various military ranks and decorations which rest upon your success or failure in battle.

What's impressive, however, is that this has not detracted too much from the simulation side of things.There are 12 missions available, pitting you against both airborne and surface opponents, but before you can master these you will have spent at least a couple of days just learning to handle the aircraft. Keeping in the air is a doddle in this game, but proper alignment for landing and practise is quite another matter.



Falcon: (Mac version) Cockpit view straight ahead: you're on the Milk Run, easiest of the twelve missions, and you've got to bomb three targets. A small landscape is more than compensated for by a very testing military challenge.

The manual approaches training from the practical, rather than the theoretical side, giving you some easy flying tasks to accomplish and also setting up the flight characteristics to make both crashing and stalling impossible for the beginner. Although rather daunting at first, this approach works well and makes the learning process far more immediate.

The display is very attractive. Instrumentation includes most essentials, plus a 'Threat Warning System' (spot that MiG) and a selection of HUDs, or 'Head Up Displays'. These give essential flight and target information by reflecting it off the windscreen, thereby enabling the pilot to keep an eye on altitude, speed, course and so on without taking his eyes off the action.

There are different HUD's for use when various weapons systems are activated, including guns, various missile types, and bombs. Mastering their use is essential for success in even the simplest missions.

There's a duty roster and a Hall of Fame, which allow you to record the achievements of up to ten players on disk. Success on missions is rewarded by decoration and confirmation of higher rank. Rank is more than just status, however, since it also determines certain flying characteristics and enemy behaviour. At 1st Lieutenant level, for example, you get unlimited weapons without having to bother about weight, and the opposition just sits there waiting to be shot at. If you're a Colonel, you'll be worrying about being captured, stalling, missile attacks, overloading, blacking -out due to high G forces, and a dozen other factors that lesser ranks don't have to contemplate.

The best thing about this game, however, is the extensive nature of the gameplay. When you start, you'll just be concerned about getting into the air. By the time you finish (if you ever do) you'll be confronted with a very wide range of decisions, many of which have to be made instinctively and immediately, both in the air and on the ground. Should you foil that heat-seeking missile with a flare? Should you use the AIM-9L or the AIM-9J missile on that elusive MiG? And, if the unthinkable threatens, should you eject and risk capture (or even death) or should you try to nurse your plane back home? Certainly the nearest thing to joining the USAF currently available to a computer flight-sim enthusiast, but more of a militaristic than a flying challenge.

Display quality	8
Sound	7
Instrumentation	7
Documentation	8
ACE Rating	8

TOMAHAWK

Digital Integration

Atari 8-bit	**£9.95 cs £14.95 dk**
Spectrum	**£9.95 cs**
C64/128	**£9.95 cs £14.95 dk**
Amstrad CPC	**£9.95 cs £14.95 dk**
IBM PC	**£24.95 dk**

- Helicopter simulated Hughes AH-64A Apache

Helicopters have come a long way since the old days when Westland ruled the waves. Although the British company came up with the excellent Lynx (when did you last see a helicopter loop-the-loop?) the Americans have been hard at it and the Apache shows just what modern US technology can stuff under a rotor blade when it sets its mind to it.

Digital Integration leapt to fame with their *Fighter Pilot* simulation, which was the first flight sim for 8-bit micros to give a no-compromise combination of combat challenge and simulation authenticity. It's still an excellent buy but misses out somewhat in the ground detail stakes. *Tomahawk*, on the other hand, draws – and improves – on the tradition established by Durell's renowned *Combat Lynx* , which gave improved wireframe landscape features and a reasonable degree of flight control realism.

First, the instrument display is excellent. Clear, sensible read-outs give all essential information. The landscape is slightly crude but still ambitious and effective for 8-bit machines. It would be nice to see this

What the experts said...

ACE visited the Bristol and Wessex Aero Club to see how flight sims measured up in a professional environment. Byron Caws, Operations Manager at the Club and himself an experienced pilot, put SubLogic's Flight Simulator 2 through its paces and had a lot to say about simulators in general.

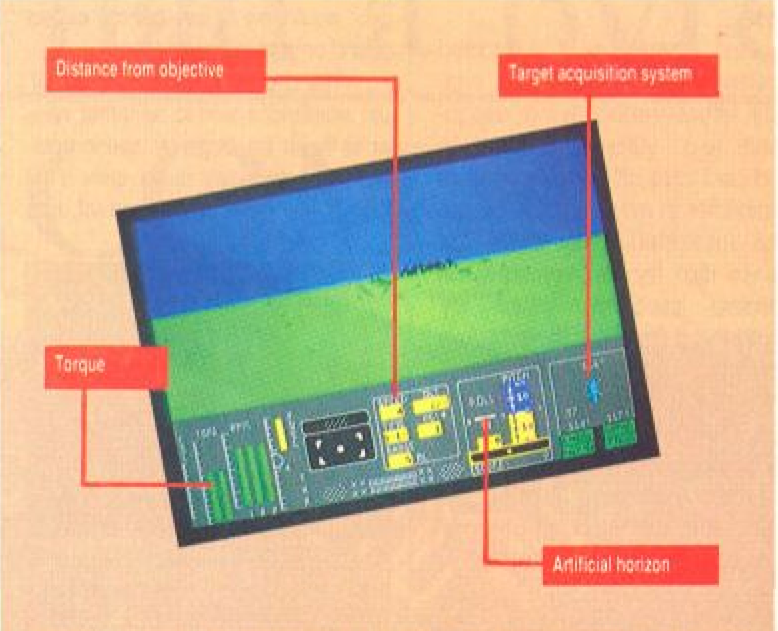
'First', he pointed out, 'there's a huge difference between simulation flying and the real thing. The difference is down to the method of control. Using keys and joysticks is a far cry from handling an aircraft in the air, no matter how good the simulation.'

To prove his point, Byron showed us the Club's own simulator (see separate box) and pointed out how 'twitchy' it was in performance. 'If you can fly this thing accurately,' he said, 'you can fly anything.'

Other real-world hazards that a pilot has to cope with include turbulence (not often properly implemented in simulators) and other weather conditions. *Tomahawk* and *Flight Simulator 2* both include some weather factors but you're unlikely to run into a full-scale hurricane while sitting in your armchair.

Byron Caws of the Bristol and Wessex Aero Club putting *Flight Simulator 2* through it's paces. Steve Cooke looks on as the man with the know-how makes it all look so easy.

However, the pros do have some good things to say about simulators. 'They build up a habit of instrument scanning', pointed out Byron, 'which could certainly save your life in a real plane. And in this respect they are also helpful for instrument flying practise.' But what's really needed is a greater degree of visual feedback *outside* the cockpit. 'Visual flight rules are an essential part of flying', say the professionals, and it seems that until we get more extraneous visual detail into a simulator they will remain a little bit like driving your car without seeing the bends in the road.



Tomahawk: (C64 version) There's an enemy target 5 miles away and we're closing steadily. The laser guided Hellfire missiles are armed and that rectangular sight will soon be locking onto some unlucky 'hostile'.

game running on an ST or an Amiga, but for time being this will do nicely. Landing pads, pylons, tanks, guns, helicopters, trees, and mountains all come and go with simple but effective majesty as you search out up to 1024 targets on a large map. There are four missions of increasing difficulty and complexity, culminating in an almost impossible game of noughts and crosses with the enemy as you each seek to support your ground forces and occupy whole rows of the grid, thereby taking them out of the game while you proceed to the next.

You have guns, missiles, and rockets to fight with and flying options include variable cloud cover height, day/night flying, crosswinds and tubulence. There are four pilot ratings with enemy action and skill doubling with each increase in player status. Flight sim fans used to the muscle of big jets may find the Apache limited by comparison in some departments, but push the machine to its limits and you'll be surprised what you can get out of it. A must for chopper champions and a strong contender for the rest of us, though simply applying collective and rising into the air doesn't quite compare with roaring down the runway.

Display quality	7
Sound	4
Instrumentation	8
Documentation	4
ACE Rating	7

CHUCK YEAGER'S ADVANCED FLIGHT TRAINER

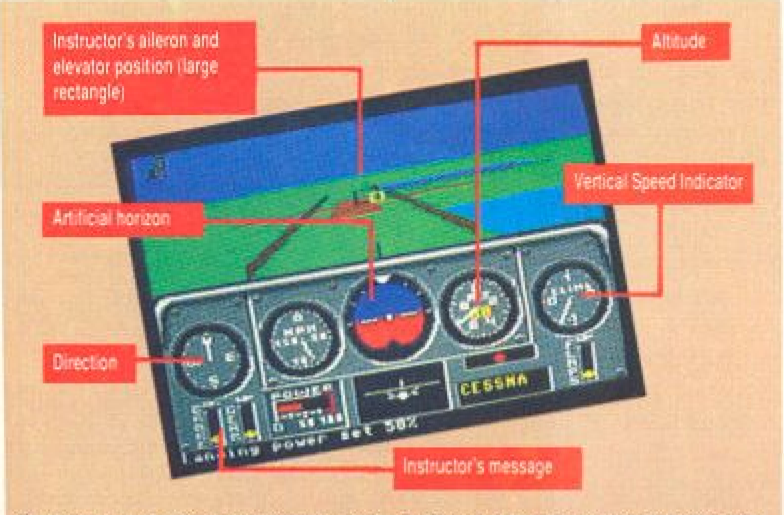
Electronic Arts

C64/128	£9.95 cs £16.95 dk
IBM PC	£24.95 dk

- 14 production and experimental aircraft, ranging from Sopwith Camel to XRH-4 MadDog experimental aircraft.

Strange how nobody's done it before, but this is the first flight sim to make a serious attempt at flight *training*. AFT offers four modes of operation, Test Flight, Formation Flying, Airplane Racing, and Flight Instruction – a wide range of activities, but it's the training side that really stands out.

The system works by giving you a HUD (Head Up Display) with two rectangles. The movements of the smaller rectangle reflect the aileron and elevator movement of the player, the larger rectangle shows you what the instructor would do if *he* were flying the plane instead of you. This means that to find the correct flight path and attitude you simply have to keep your rectangle nested within the instructor's – and provided you're also adjusted your other controls (throttle, flaps etc) correctly all should be well. There's help there too, however, since clear instructions about control adjustments are given via brief messages at the bottom of the screen.



Chuck Yeager on the C64: a spot of landing practise in a Cessna before trying out the latest experimental jet can't be a bad idea. There's a good zoom option on the scenery, as well as numerous view options, including tracking and ground perspectives.

There are a number of different training options and in each case you can choose either to observe the lesson, or actually to carry it out. The small but informative manual gives essential back-up information, including recovery from stalls, take-offs, landings, and other basic aerial manoeuvres.

Once you've mastered the techniques, you're ready to try Test Flight, putting various planes through their paces and exploring the scenery in the process. Most enjoyment to be had here is from locating one of the seven 'obstacle courses' scattered round the terrain, presenting streets to fly along, pylons to fly between, and so on.

Equally challenging are the aerobatic routines in the Formation Flying section – there are six pre-recorded routines and you can devise and SAVE your own. However all these pale into insignificance beside the Race section, which has you roaring along a few feet above the ground, passing through gates in correct sequence. You won't get far in this until you really know your aircraft.

The graphics in AFT aren't bad at all for an 8-bit flight sim, though PC owners may be disappointed by what they get compared to other PC programs available. There's a lot to this program, making it good value for money and an excellent trainer for those keen to progress to more sophisticated simulators when hardware or cashflow permits.

Display quality	7
Sound	3
Instrumentation	6
Documentation	7
ACE Rating	7

Could a flight sim save your life?

There's a fantasy locked away in every armchair pilot's imagination...the plane he (or she) is travelling in suddenly goes into a steep dive...the pilot's had a heart attack...Joe (or Joanna) Doe leaps from their seat, clutching their *Strike Force Harrier* manual and yells 'Don't panic! I'll take over!'. A short while later you're landing safely at Kennedy Airport...

Hmmm...Supposing Joe Doe really *did* leap up in front of you like that, claiming to be able to save the day, should you let him get on with it, or should you just club him over the head and start saving your prayers?

Well, when Joe sits down in the pilot's seat, he's going to see something like this screenshot in front of him. He'll probably recognise the articifial horizon, airspeed indicator, and tachometer. He'll probably have some idea of what he ought to do to get the plane out of a stall (if this has occurred). But whether he can put it into practise is quite another matter.

To start with, he probably won't be that used to mastering rudder control and dealing with yaw (where the plane slews from side to side). The altimeter may be wrongly set, showing height above sea level, which means that if you're crossing a mountain Joe may be landing sooner than he'd like to. If the engines have actually died for some reason he's highly unlikely to be able to restart them (that sort of thing is always done for you in a flight sim).

Cockpit of a Piper Saratoga. Can you identify the different instruments? There will be very little here (if anything) that you won't find in *Flight Simulator 2*, but it looks just a wee bit more complex than *Spitfire 40*. Don't expect any change out of £175000 for one of these.

Of course, the plane may well be behaving quite happily. Like cars, planes don't immediately go haywire the moment you take your hand off the steering wheel and at 20000 feet you've got a lot more leeway than you have in a country lane. But even if it is, and even if Joe gets it under control, there remains the problem of what to do next. Most flight sims have you pottering around a limited map with lots of visual clues and an easy-to-understand map display. Joe may not have the faintest idea where he is, and even less idea of how to get to where he wants to go...So better start saying your prayers after all, because when it comes to flying, a little knowledge isn't just a dangerous thing, it's fatal!

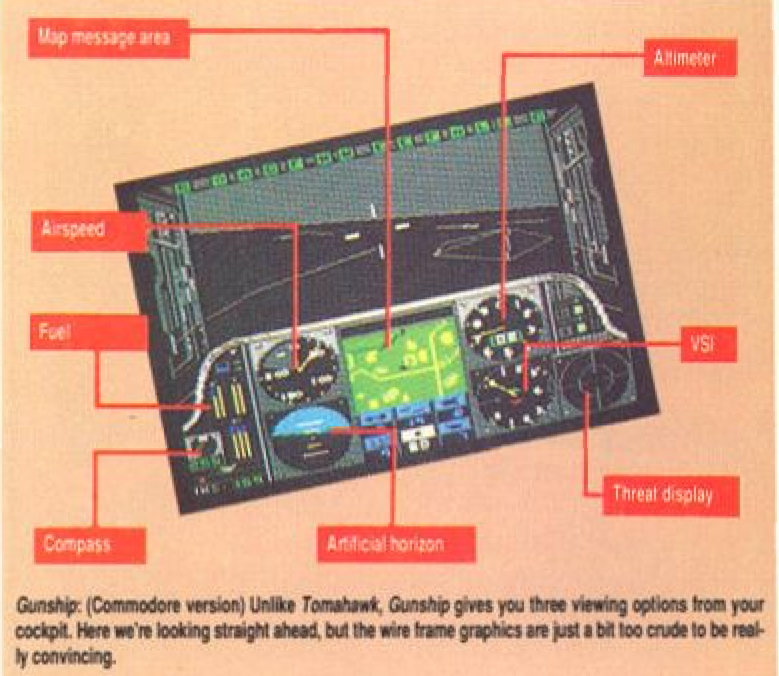
GUNSHIP

Microprose

Atari ST	**£24.95 dk**
IBM PC	**£34.95 dk**
C64/128	**£14.95 cs £19.95 dk**
Spectrum	**£9.95 cs £12.95 dk**
CPC	**£14.95 cs £19.95 dk**
Amiga	**£24.95 dk**

- Hughes AH-64A Apache

Major Wild Bill Stealey has carved quite a reputation for himself in the UK games industry. His company Micro-



***Gunship*: (Commodore version) Unlike *Tomahawk*, *Gunship* gives you three viewing options from your cockpit. Here we're looking straight ahead, but the wire frame graphics are just a bit too crude to be really convincing.**

prose do have a knack for turning out impressive products with quality packaging and a good dose of healthy gung-ho aggression. Hostiles beware as Wild Bill sends you off on mission after mission with the promise of promotion to Colonel and the award of the Congressional Medal of Honour.

Gunship makes an interesting comparison with *Tomahawk* from Digital Integration. The former has all the hallmarks of an American up-market product, with an excellent manual and a lot of backslapping throughout the game that helps keep interest from flagging. Disk versions have a Hall of Fame, and the structure of the program is cleverly designed with enemy recognition tests, training missions, radio transmissions from base, armament screens and so on. Some versions even have a cassette tape featuring a live tutorial from Major Bill himself. Yee har!

By contrast, *Tomahawk* seems a rather restrained affair, but once you've put down the bulky manual and started flying, *Gunship* shows definite disadvantages over its UK rival. It's easier to fly, but somehow less convincing, and the landscape (although more colourful) is less effective. Instrumentation is as complete but not as neatly laid out and as a result rather more tiring to look at after a long time in the air. There's even a rather clumsy screen glitch that regularly flickers across the screen on the Commodore version.

These niggles apart, this program still represents reasonable value for money – but Major Bill has some tough competition in *Tomahawk*.

Display quality	5
Sound	6
Instrumentation	5
Documentation	8
ACE Rating	6

STRIKE FORCE HARRIER

Mirrorsoft

Atari ST	**£24.95 dk**
IBM PC	**£24.95 dk**
Spectrum	**£9.95 cs £12.95 dk**
C64/128	**£9.95 cs £12.95 dk**
CPC	**£9.95 cs £12.95 dk**
Commodore Amiga	**£24.95 dk**

● Harrier GR.3

The Harrier has been a highly successful aircraft, combining agility with VSTOL capability. It does this by having engines that can be tilted through just under 100 degrees, and although Mirrorsoft's program only allows three tilt positions (horizontal, 45 degrees, and vertical) this feature still makes for some interesting flying techniques.

On the ST this program is a winner for those who want an easy-to-fly, fast, highly manoeuvrable aircraft with a very large map and straightforward shoot-to-kill, bomb-to-blast combat opportunities. Even the 8-bit versions come out looking pretty good, but obviously they can't match the ST's solid graphics and extremely smooth operation.

There's only one mission – destroy the enemy HQ 125 miles from your start position. The map is divided into grid squares and you are provided with four ground sites where you can rearm and refuel.

To capture the enemy base, you must strike into enemy territory and identify grid squares with minimal hostile activity. These sights are suitable for use as ground sites, and by landing and calling up ground support you can usually move one of your sites to the new location. By doing this you can move your resources across the map which is far too large for you to traverse without fuel and armament backup en route.

There is therefore a certain strategic element to the game, as well as the fun of flying an agile plane and the challenge of developing tactics to defeat the opposition. Thrown up against you are Surface to Air Missiles, Anti-Aircraft Artillery, ground fire from enemy troops, and enemy aircraft (which are a lot faster than you are). Chaff and flares are provided to help you foil radar guided and infrared seeking missiles.

Although instrumentation is limited, the sheer playability of this flight sim makes it a good buy for search-and-destroy buffs – particularly on the ST – but don't expect bulky training manuals, total authenticity, or dozens of control/display options.

Display quality	7
Sound	4
Instrumentation	5
Documentation	4
ACE Rating	6

Simulated Soaring

Nowadays commercial simulators have become so sophisticated that British Airways, for example, can train people on the ground and then put them straight into a jumbo jet. Naturally these beasts are just a little beyond the purchasing power of even the average millionaire, but even smaller simulators have a role to play in flight training.

At the Bristol and Wessex they use a dedicated simulator to practise instrument flying. The model you see here has all the instrumentation required to simulate flight including navigational data and a plotter to determine your course. As you can see it has a number of instruments that would be familiar to any home micro enthusiast who's put in a few flying hours on a good simulator.

A Cessna 152 – not a far cry from the planes available in *Chuck Yeager's Advance Flight Trainer* or *Flight Simulator 2*. Expect to spend about 30 hours in this before getting your license – and then you can buy your own for £15000. Flying a real plane isn't quite the finicky experience a simulator might lead you to expect, since you've got the physical feedback from the controls as well as visual flight rules to help you.

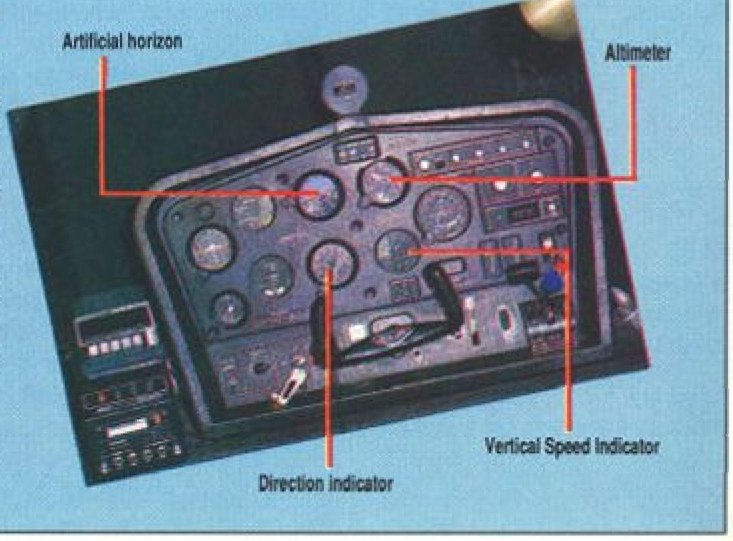
For those without simulator experience, the ones to look for in particular are your **Artificial Horizon** (or **Attitude Indicator**) which will give you a good idea of whether your banked left or right and/or titled forwards or backwards – essential information if you want to know whether you're headed for the gods or the ground.

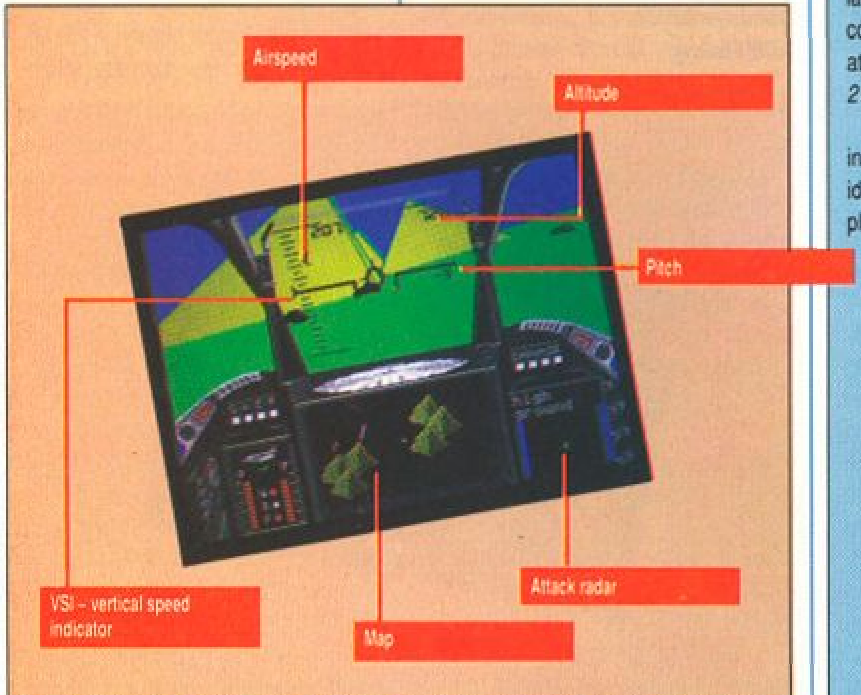
Your **Airspeed Indicator** is just as important – every aircraft has a certain **stalling speed** which will have you heading earthwards with dismaying rapidity. *Chuck Yeager's Advanced Flight Simulator* was the only program to give advice on how to get out of stalls, a technique which involves restoring air-flow over the wings (and therefore lift) by releasing back pressure on the stick.

Your **VSI** or **Vertical Speed Indicator** will tell you how fast you are gaining or losing height. This is especially important when landing – used in conjunction with airspeed you can ensure that your landing is as smooth as possible. And of course you'll need to keep a close eye on your **Altimeter**.

Finally, there's your **compass** which, of course, tells you which way you're going. but just to give you an idea of the complexities of real (as opposed to simulated) flying you should know that even instruments as straightforward as your compass and your altimeter could be inaccurate unless properly adjusted to take atmospheric pressure, vibration, and magnetic variations into account. *Flight Sim 2* does introduce some of these variations, but no other simulator we tested did.

To get yourself a real pilot's license nowadays would cost you about £3000, including at least 30 hours flying time. A good simulator can give you a reasonable idea of the different elements involved in flying, though the actual feel of flying a plane is obviously just a teensy weensy bit different.





Strike Force Harrier: (ST version) There's a SAM missile site somewhere round here that needs blowing up – and you can strafe a few trees if you're feeling really aggressive. Clever use of display makes maximum use of instrumentation possibilities, but display options and instrument readouts are still limited.

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ATARI ST	☐	☐
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NEWS ☐	LETTERS ☐
GRAPHICS ☐	CENSORSHIP ☐
GAMES CREATORS ☐	ARCADES ☐
MUSIC AND MIDI ☐	SCREEN TEST ☐
BUYERS' GUIDE ☐	ADVENTURES ☐
SPECIAL OFFERS ☐	COMPETITIONS ☐
TRICKS'N'TACTI CS ☐	PREVIEWS ☐

How do you think these sections could be improved?

____

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(use an extra sheet of paper if you like!)

Are there any other sections or subjects that you would like to see introduced into the magazine?

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Rate any of the following magazines you are familiar with on a scale of one (poor) to five (excellent):

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Crash	☐
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Zzap!64	☐
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Computer and Video Games	☐
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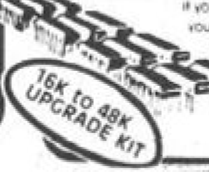

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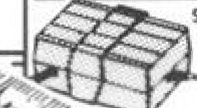

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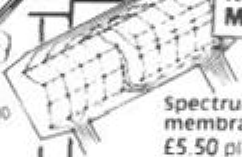

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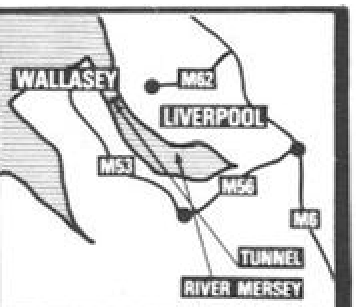

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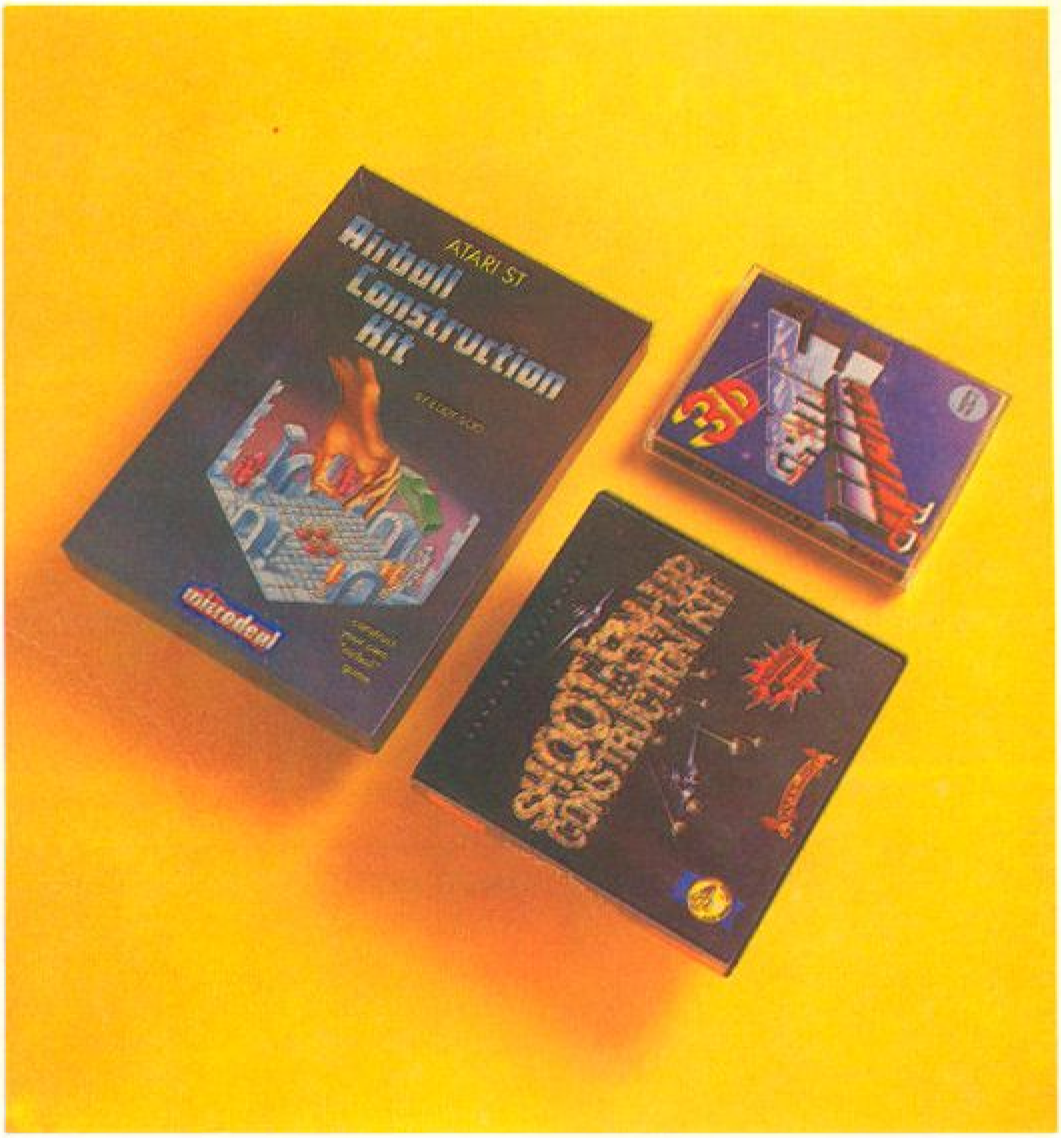
What have *Airball*, *Boulderdash*, Mastertronic's £1.99 oldie *Molecule Man* and the as yet unreleased ST version of *Thrust* all got in common? Construction sets, that's what. All of them can be redesigned using utilities either given away with the game or sold separately. You want to reposition objects or reshape tunnels? No problem.

If you're feeling more ambitious, systems like Outlaw's *Shoot-Em-Up Construction Kit* or CRL's *3D Game Maker* aim to give you game creation power without the need for any programming knowledge. Can an affordable system really turn you into a red hot games author overnight?



DIY GAMES?

Construction sets of yore

The idea of taking an existing game and altering room layouts, moving landscape features around and so on isn't a particularly recent one. In the early days of home computing there was simply no need for this kind of thing. You could create a state-of-the-art game using your machine's built-in Basic with, for the flashy elite, a few bytes of machine code POKEd in from DATA statements.

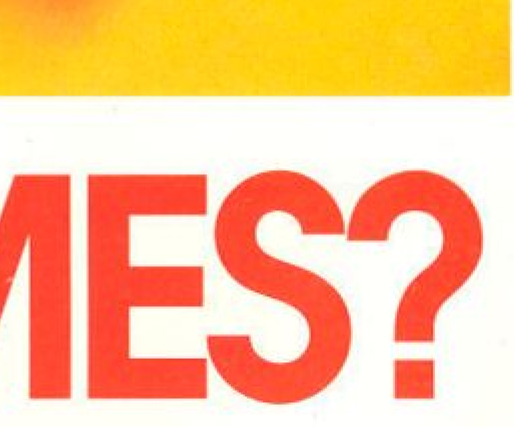
The emergence of an organised software industry and the meteoric rise in programming standards soon changed all this. By the boom years of 1983-4 when games like Ultimate's classic *Knight Lore* hit the streets, the cutting edge of games writing went far beyond the average computer user's programming expertise.

Make no mistake about it however, people still wanted to get involved in professional-looking games, even if that meant other people's games. For the code-literate, the growing complexity of commercial games made them fascinating things to explore and tinker with – and so the games poke was born. The vast majority of users simply didn't know how to go it alone like this, but the door was not completely closed. Small ads for *Knight Lore* 'editors' started to appear in the computer press at the height of the Spectrum world's Ultimate frenzy, promising the power to completely redesign the game (and venturing into a rather grey area of copyright law to boot!)

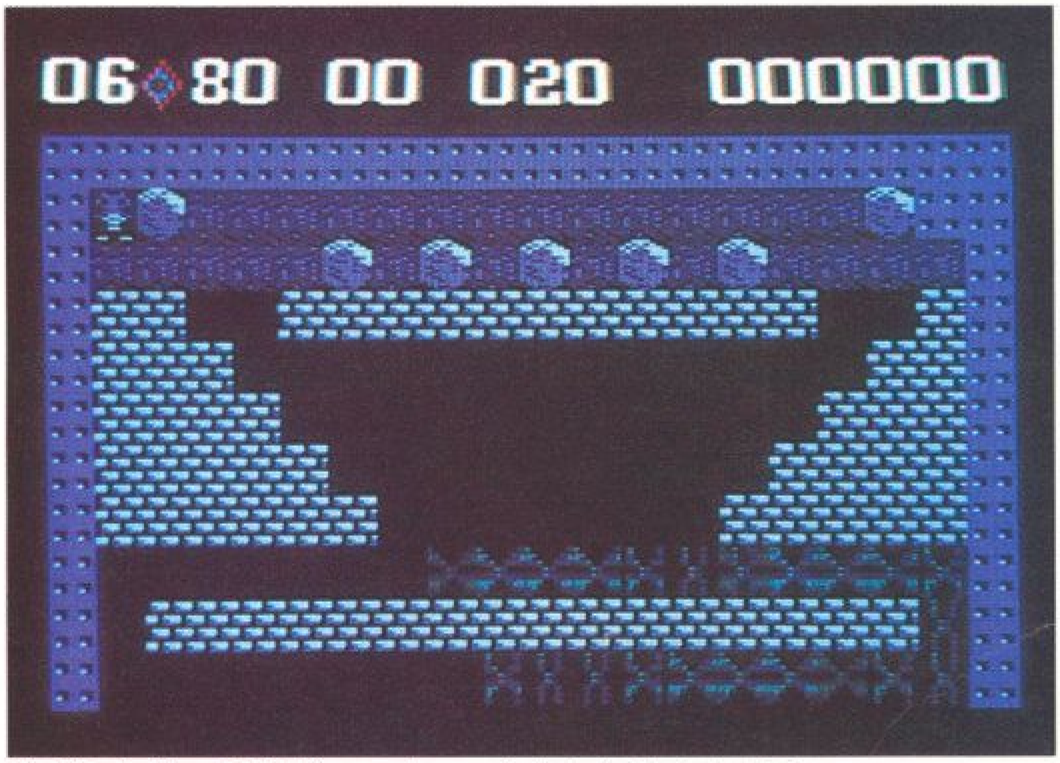
With such an obvious demand from computer users for redesignable games it seems surprising that these should have been so few and far between. In the States, where the idea of continuing support for games is much stronger, construction sets have long been standard follow-ups to successful arcade titles. In Britain the idea is only just starting to catch on in any sort of a big way, but with the increase in disk ownership and the big emphasis on adding 'extra value' to games a construction set boom could be just around the corner. Wouldn't you rather have a game redesigner than a novella, 'Win a T-Shirt' entry form or little metal badge?

Real programmers don't use S.E.U.C.K.

It really did look for a while, three years ago or so, like games creation utilities would soon put professional quality home-brew programs within everyone's reach. Developments in the adventure world seemed to point the way: Gilsoft's *The Quill* already offered budding Scott Adamses real game creation power without a byte of code in sight, and the *Lightning* series of programming utilities from Oasis (now defunct) raised hopes of similar arcade game tools.



Amstrad *Molecule Man*: budget isometrics with a bundled editor seemed like a tremendous bargain when it was first released. Now the big M are giving it away as a B side on their MAD X range!



Amstrad *Boulderdash*: now Data Byte bring you an editor program for the classic earth-moving brain-stretcher.

SHOOT-EM-UP CONSTRUCTION KIT

Outlaw Productions, C64 £14.95 cs £19.95dk

Although styled a 'construction kit' this utility's a good deal more than that name would normally suggest. It assumes the barest bones of simple 2D shoot-em-ups and lets you redesign the rest. You can draw your own sprites (animated or not), design game backgrounds and maps, your own sound effects, enemy attack patterns and generally set a whole host of game parameters the way you want them.

The system is nothing if not flexible. It allows for game sections that scroll vertically or horizontally, either at a fixed speed or using a "push scroll" system where the player's sprite forces the scroll by trying to move off screen. You can join sprites to make the large end-of-level enemies so popular in coin-ops these days, or link a sprite's animation to its direction of movement.

Surprisingly for such a recent product there's no way of implementing smart bombs, collectable weapons or wave bonuses, nor can you have alternating two player action. You can't send the player right back to the start of the level/game when he dies either, though perhaps that's something to be applauded.

These clearly aren't minor omissions given the sort of shoot-em-ups most people will want to create, but they shouldn't be allowed to obscure the system's many good points. It's got a consistent feel in use, it's very flexible within the limitations mentioned above, but most important of all it can produce excellent finished products. It would be perfectly possible to produce good budget-standard games on the system, though it remains to be seen how long they'll be marketable as such once all those *SEUCK* buyers come on stream.

SEUCK: The demo game *Slap and Tickle* shows what the system's capable off - and makes quite playable stuff in its own right.

Was it all pie in the sky? *3DGM* and *SEUCK* would have been hailed as works of towering genius back in those early days, but neither of them offers the kind of freedom and scope for ingenuity you need to make your programs stand out these days. Even if everyone else didn't have access to the same utilities too, no *SEUCK* or *3DGM* game could dazzle anyone with its originality.

The problem has a lot to do with the way the games industry has progressed over the intervening years. The 8-bit games of today drive their host machines harder than ever before, straining against memory and speed limitations. State of the art games are rarely developed on the machines they're intended for these days. Typically the programmer writes the game code on an ST or Amiga, transferring it to the 'target machine' (Spectrum, C64 or whatever) only to test new sections or debug old ones. The reason for this approach is simple: modern games and modern programming tools won't both fit in your average machine simultaneously.

Furthermore, simply because a game's technically adequate doesn't guarantee it a place in the shops anymore. Where the programmer can't produce a technical tour de force, he usually has to rely on having an original idea to sell his product. By their very nature these games creators can't implement really original ideas. The whole point of them is that they turn out games like the ones the professionals are already writing.

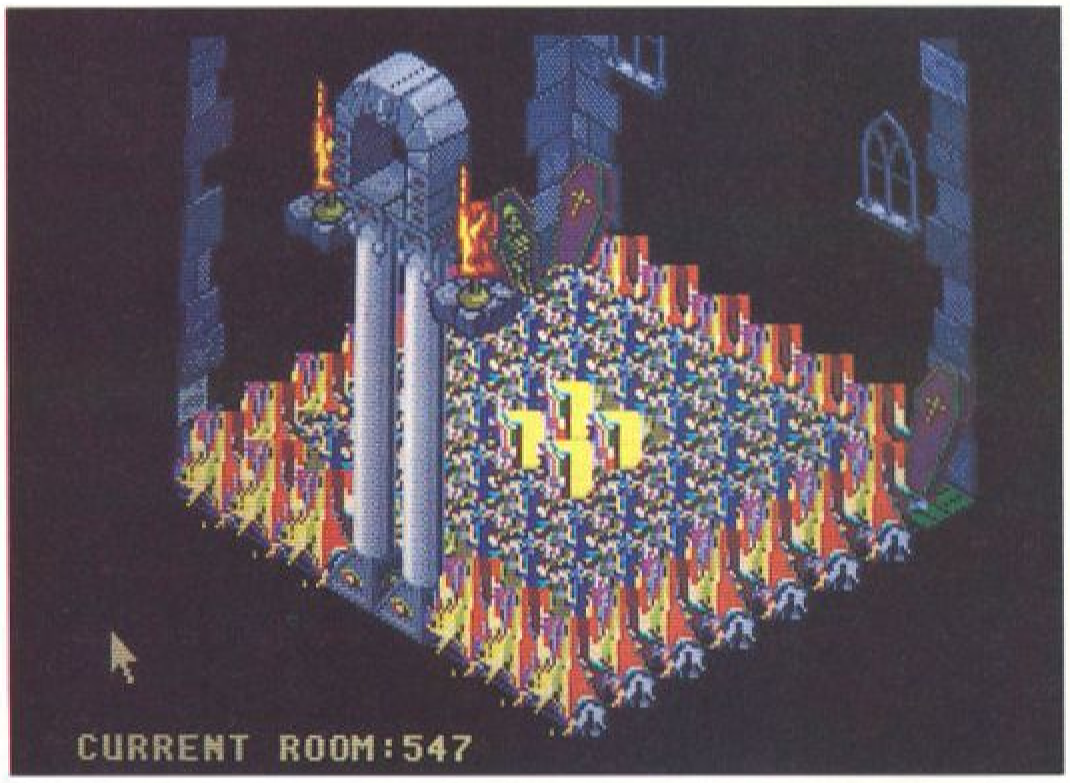
To a certain extent any success games creators have can only serve to underline how stagnant the market has already become. Users of *3DGM* can't hope to compete with the likes of Jon Ritman (author of *Batman* and *Head over Heels*) – his game system is technically far superior, and it shows in the end products – but if *SEUCK* could handle extra weapons and alternating two-player action you could clone an awful lot of full-price C64 games quite acceptably with it.

Games are moving on, of course. Software sprites and parallax scrolling are becoming increasingly common on the C64, the ancient *Knight Lore* is now a budget title on the Spectrum, and both machines are getting a little over the hill now anyway.

With 16-bit machines the story could be very different, however – at least for a while. ST and Amiga programs don't necessarily fill the machine's memory, and even if they do there's a quick-ish disk drive handy for storage. With the dearth of good software for the new machines it often seems like almost anything that runs will sell, and with 'budget' prices starting at around the £10 mark who needs to hit the full-price bracket?

If there isn't an explosion of Amiga or ST games creators – and there probably won't be – the reason won't be far to seek. Quite simply, what's the point in selling your system to everyone else once, if you can keep it to yourself and sell them the *products* of the system time and time again?

If that sounds cynical or greedy, bear in mind that programmers have a living to make the same way anyone else has. All programmers end up recycling their old programs to some extent, whether it's just high



ST *Airball*: the construction set for Microdeal's impressive bounce-em-up costs extra, but wouldn't you like to be able to rearrange the isometric furniture?

score table and software sprite routines or vast chunks of game code. Many develop their own game-creation tools: Rainbird's ST *Advanced Art Studio* began life as a sprite and game background design utility, and still has strong games leanings to it. If games writers don't actually go the whole hog and create their own super-*SEUCK* systems, it's probably because they can work fine with the set-ups they've got and still keep the flexibility they want.

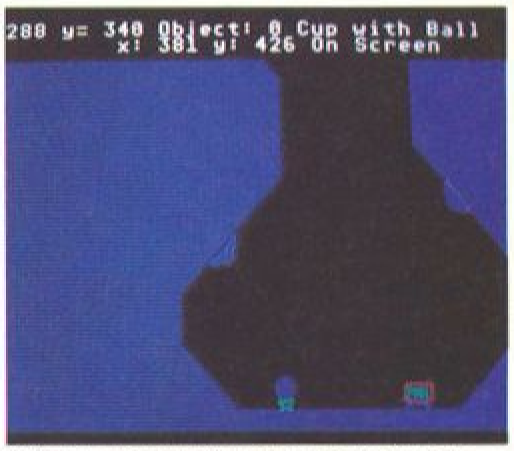
Budget builders

Surprisingly enough, construction sets have proved most popular in this country with the big budget houses. Not selling the fruits of the programs mind you – Mastertronic won't even sell utility-produced adventures, and the other major firms seem unimpressed with the possibilities of arcade games creators – but actually giving game editors away with the games themselves.

Recent examples that spring immediately to mind are Mastertronic's highly playable *Spore* and Firebird's £2.99 release *War Cars Construction Set*. It's not hard to see why games like these appeal to budget houses in particular: with their narrow profit margins these companies simply can't afford to give away fancy extras or glossy manuals, but the B side of the tape is (more or less) free.

As for the programmer's time spent creating the editor, that too can prove very cheap: for large multi-level games the game's author will probably have to create some kind of level editor to use in designing the built-in screens, and the extra work involved in making this presentable could well pay off in the extra ease of use for this purpose.

There's more in the pipeline in the way of editable budget games. Mastertronic's classic 3D isometric title *Molecule Man* was the first ever such game to have a built-in editor, and is about to get a new lease of life as the B-side of the first MAD X game. Also on the horizon is ST *Thrust*: no release date has been finalised for this long-awaited conversion, but the current working version contains a first-rate planet editor. DIY tunnels, here we come! ●



ST *Thrust*: a great version of a great game is still on the starting blocks at Firebird Silver, but if they throw in the planet redesigner as well it'll be worth waiting for.

3D GAME MAKER (3DGM)

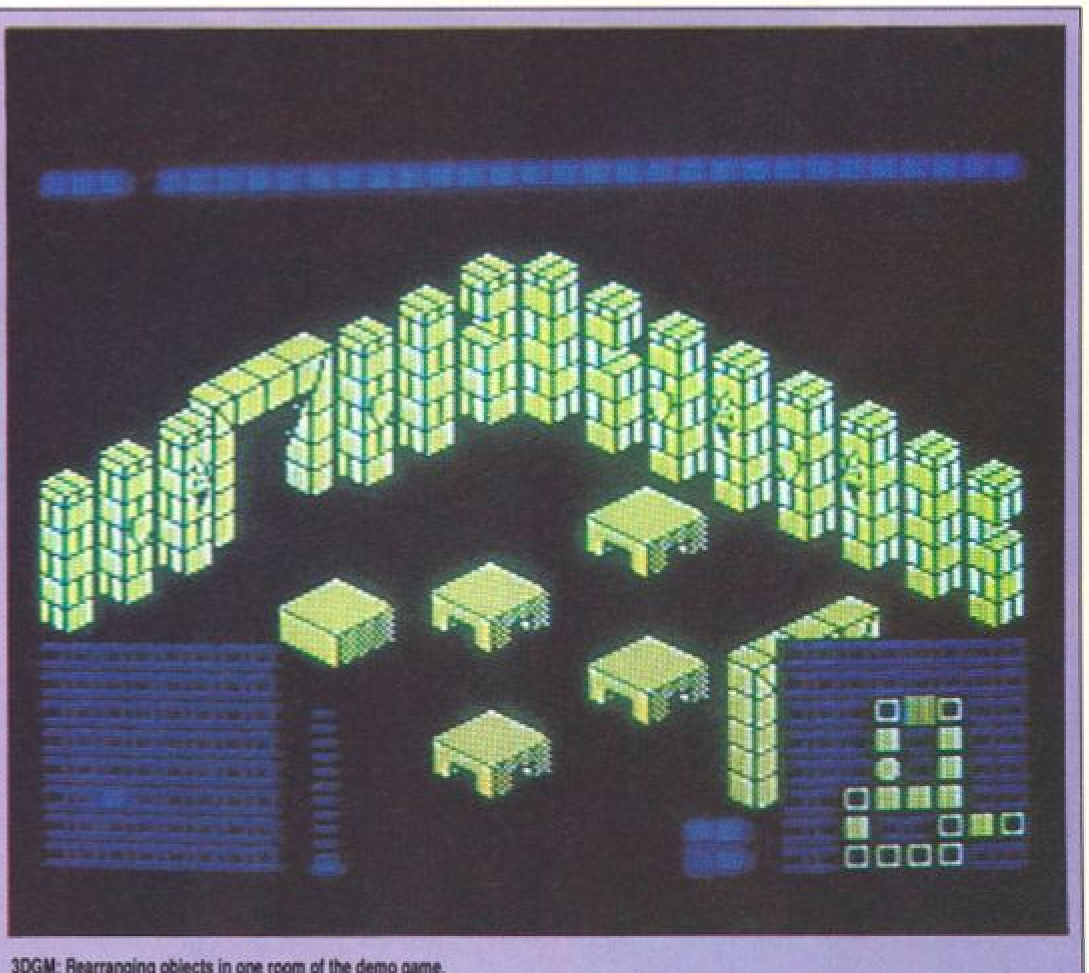
CRL, Spectrum £9.95cs

More than a construction set but only just, this CRL offering would have been an answer to many people's prayers a few years back. Essentially it's an isometric 3D room-by-room game of the *Knight Lore* or *Batman* school - not in the same league, mind you - only redesignable.

The redesignability extends to the object and room background graphics as well as room layout and map, but not to the way objects within the game behave. You're stuck with the system's rather limited repertoire of killing blocks, bouncing nasties and the like. Giving them a new look is easy, but it'd take more than that to disguise where your finished product came from.

The object of a *3DGM* game is always to reach a fixed finishing point alive, which limits gameplay to put it mildly. Even compared to *Knight Lore* the puzzles you can reasonably construct are on the weak side and the screen slowdown in a full room is way behind the state of the art.

None of this is to say that you can't have a lot of fun with *3DGM*, but don't expect the finished product to measure up to budget titles like *Chimera* or *Molecule Man*. As for *Head over Heels*, forget it.



3DGM: Rearranging objects in one room of the demo game.

It's here-The return of Elvin Atombender!

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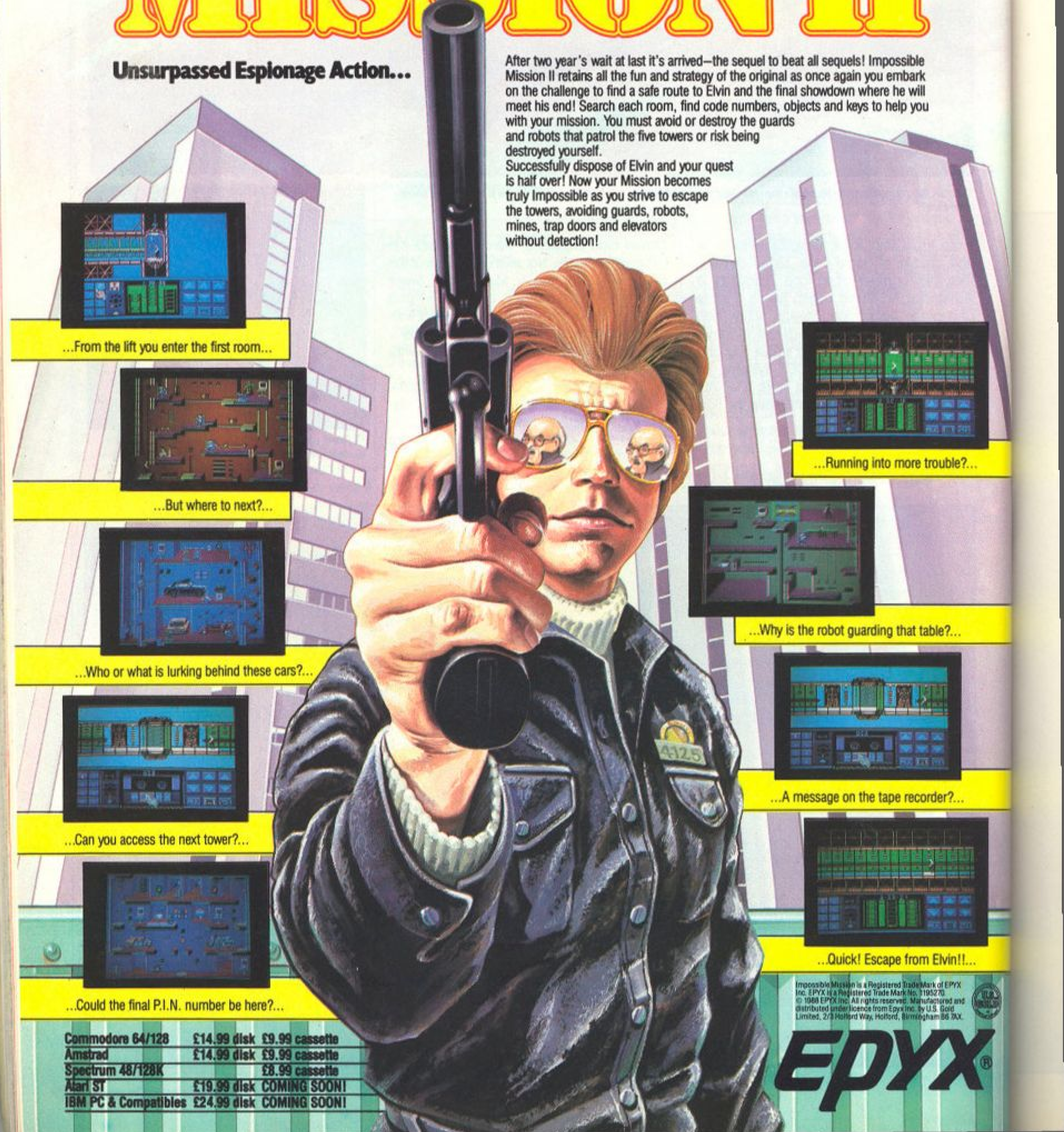

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...Running into more trouble?...

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Magnetic Scrolls' *Jinxter* – does it uphold this premier company's reputation as Britain's answer to Infocom, who are fighting back with *Border Zone*? Plus *Deja Vu* on the Commodore 64, a glimpse of games to come with *Shadowgate* , and of games that were with *Suspect.* Forget those pesky aliens and check out some game-worlds where YOU call the tune...

JINXTER

Charming little number from MAGNETIC SCROLLS

JINXTER is only Magnetic Scrolls' third adventure, but it shows you how little activity there is on the adventure scene (at the professional end of the market) when you realise that they are already approaching the number one slot in the UK.

The game boasts the same excellent graphics as its two predecessors, *Guild of Thieves* and *The Pawn*. It also features the usual excellent parsing we've come to expect from Mag Scrolls, but interestingly the company have removed the GO TO command which allowed you to move to a named location. A pity, but perhaps the map layout in *Jinxter* (which includes several areas of water and other hazards) would have made the command too difficult to implement.

One thing it doesn't have is a RAMSAVE facility, so if you've got a single disk machine you'll have to swap disks every time you want to RESTORE or SAVE, which becomes slightly tiresome as you'll need to go through this process frequently.

ACE 916 RATED

The storyline shows an improvement on earlier games as well. *The Pawn* was altogether too obscure to be really enjoyable as an adventure. *Guild of Thieves* was much better – a simple treasure hunt with some excellent locations. *Jinxter* has got the balance just right – it's a treasure hunt again, but with only six items to collect you'll find a lot of lateral thinking and exploration required. You must find five charms and a bracelet which you then reassemble to resurrect the Bracelet of Turani, thereby defeating the power of the wicked Green Witches who are draining the 'luck' from Aquitania.

The design of the game, as mentioned in an earlier ACE article, is innovative in that death is not possible. You have a Guardian who appears when needed to save your skin and let you carry on with the game, but you won't score maximum points that way. This allows some pretty tough puzzles to challenge the experts without putting off less experienced players and adds enormously to the enjoyment of the game. Getting around *Jinxter*, then is no problem, and as before there are large numbers of encrypted clues in the accompanying documentation if you get stuck.

Sadly there are a couple of minor bugs in the production version – if you've got Version 1.05 (check by typing VERSION) you'll crash

Complex parsing must come...

There are some rather annoying moments in *Jinxter*, which you only notice because the parser is so good in almost every other respect. These moments involve what you might call 'complex actions'. A typical example of a complex action would be LIGHT THE CANDLE. In *Jinxter* this involves:

1) Opening the matchbox.
2) Taking the match.
3) Striking the match.
4) Lighting the candle with the match.

I.E. Four distinct commands. Each of these stages is necessary, as you'll discover if you try GET MATCH before you've opened the matchbox - the program will reply YOU CAN'T SEE ANY MATCH HERE, despite the fact that any sensible person would know where it was.

Another example from *Jinxter* involves opening the can of worms. You are holding the can opener, so you type OPEN CAN, to which the program replies: SHOULDN'T WE BE HOLDING OUR LITTLE TOOL IN OUR LITTLE HAND FIRST? You are holding it, but you have to type OPEN CAN WITH CAN OPENER.

Even more annoying is the fuss involving walking through doors. Suppose there is a door to the east. You type GO EAST and the program replies THE DOOR IS CLOSED, or words to that effect. So you must type OPEN DOOR first.

What we need is a parser that:

– answers LIGHT THE CANDLE with WITH A MATCH?, and (if you reply YES) responds with YOU OPEN THE MATCHBOX, TAKE A MATCH, STRIKE IT, AND LIGHT THE CANDLE.

– if you want to go east (for example), and all there is is a closed door in the way, opens it for you, whisks you through it, and closes it again after you. Come on chaps...We know you can do it...

PILGRIM

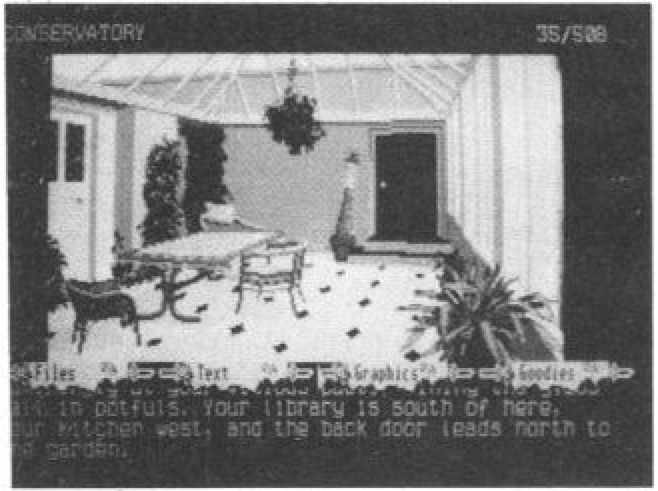
the game by going south to the bar in the pub. You will also have difficulty lighting the candle in the Pagoda. However neither of these two actions are necessary to complete the game – if you think you need the candle to illuminate darkness, you should think again – so neither of these bugs is too disastrous.

There's a magical element within the game that induces a new dimension of puzzle solving. Each of the five charms has magical properties, including the ability to change the weather (which plays a significant role in the game), freeze objects, and 'tag' them so that they always return to you if dropped or otherwise removed from your inventory.

Magnetic Scolls' text style improves with every game and Jinxter has excellent location descriptions and responses. Even trivial objects sometimes carry a carefully crafted description, as in the beer garden:

```
>EXAMINE BENCHES
What you do is sit on the benches and
drink a lot of beer and then you fall
off the benches. Orthodox, true, but
fun.
```

Jinxter enhances Magnetic Scrolls' reputation still further and confirms their position as one of the country's leading adventure houses. If you fancy a pint of Old Moosebolter in the pub, a swim in the lagoon, a spot of mousecatching, and some superb graphics into the bargain, then splash out without fear of regret.



```
in potfuls. Your library is south of here,
ur kitchen west, and the back door leads north to
garden.
```

Pity we can't show this in colour, but rest assured that the graphics in *Jinxter* are really something rather special. Spectrum +3 owners shouldn't get too excited, however – their versions are text-only.

SYSTEM	91	ENCOUNTERS	85
CHALLENGE	85	LANDSCAPE	92

VERDICT 916

RELEASE BOX

C64/128	£19.95dk	JAN 88
SPEC +3	£15.95dk	FEB 88
AMS 6128	£19.95dk	JAN 88
IBM PC	£19.95dk	JAN 88
ATARI ST	£24.95dk	OUT NOW
AMIGA	£24.95dk	JAN 88

BORDER ZONE

Three-part thrills from INFOCOM/ACTIVISION

INFOCOM are really branching out now, so what's the score?

Well, about 2-2, I'd say. First we had romance, passion, and pirates in *Plundered Hearts*. No score there, I'd say, because the game was really rather too easy, but definitely a commendation for opening up a new genre. Then came *Nord and Bert*. One goal there for hitting the puzzle market, although traditional adventurers would doubtless call 'foul'. Third Infocom release (in as many months – must be a record) was *Beyond Zork*, which definitely gets the ball through the net in all departments – fun, different, and challenging.

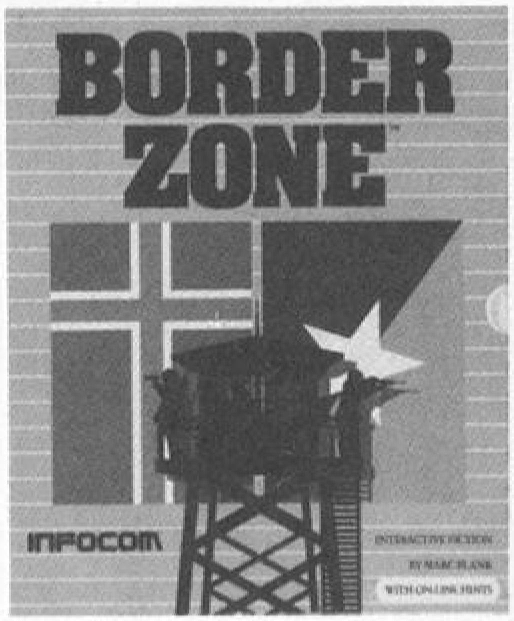
And now the company are fielding *Border Zone*. The new angle on this one (there has to be a new angle on every Infocom game these days) is 'real time'. In other words, from the moment you start play there's a little clock in the top right hand corner ticking away. You can PAUSE the action, but as soon as you start up again it's back into the race with old Father Time, even if you don't hit a single key.

Border Zone presents the tale of an assassination, or at least an attempted one. Whether it succeeds or not is up to you. There are three key characters involved, an American businessman, an American spy, and an American double-agent posing as a top KGB executive. Each character lives out their alloted span in one of three game 'chapters' and you can choose at the beginning of the game which chapter you want to play.

Chapter One gives you control of the American businessman, given a document by a wounded secret agent while on a train journey across the border from Frobnia. The agent charges you with delivering the document to his contact at the next station. Do this, and the assassination will be averted.

Chapter Two gives you the control of the same American agent from Chapter One who leaps from the train after handing over the document and must then escape across the border on foot. In Chapter Three you're the double-agent at the scene of the assassination which you must, quite naturally, try to stop without compromising your personal security or true identity.

You can tackle the chapters in any order. Chapter Two is undoubtedly the hardest (in the Pilg's opinion, anyway) whereas Chapter One is a bit of a doddle and Chapter Three about average. I'll say straight away that I didn't think this game one of Infocom's strongest releases. The real time element doesn't add much to the game – all it means is that when your time runs out and you get caught by dogs or guards or what-



Who's Number One?

There's a lot of competition between adventure houses to see who can lay claim to the 'Number One Slot'. That slot is still, in my opinion, occupied by Level 9, but sadly the Level 9 reputation rests largely on their older games. Their insistence on sticking with orcs, gnomes, and other fantasy scenarios no longer holds them in good stead as games like *Guild of Thieves*, *Beyond Zork*, and *Hitchhikers* open up new realms of interactive fiction for larger audiences. Let's hope Level 9's planned game based on the Arthurian legends brings their catalogue up to date.

Magnetic Scrolls obviously *think* they're in the top UK slot. They hob-nob with Infocom and have evening included one of Infocom's writers (Dave Lebling) as a character in *Jinxter*. Their games are certainly improving, but I reckon we need to see a couple more titles and a teensy-weensy improvement in the game design before we can give them top honours.

Infocom don't count, because they're American. But I still wonder how it is that three out of every four Infocom titles are leagues better than anything we've come up with in Britain. The Infocom parser isn't much better than either Level 9's or Magnetic Scrolls. Their games don't have larger vocabularies. They certainly don't have graphics. What they do have, though, is superb game design and excellent atmosphere. Having said that, though, I was a bit disappointed with *Border Zone*...

SHADOWGATE

State-of-the-art spooky safari from MIRRORSOFT

RELEASE BOX		
Apple Mac	£29.95dk	OUT NOW
C64/128 + Amiga + Atari ST versions due 1988		

THIS is the third game in a series produced by ICOM Simulations in the US for Mindscape, and licensed in the UK by Mirrorsoft. The games are good examples of how the increased computing power of a 16-bit machine (in this case a Mac) can be used to introduce new playing styles.

The game is entirely mouse-controlled. The screen has four main windows displaying inventory contents, current location, available exits, and text messages. This in itself is not entirely revolutionary, but the way the game is played certainly is. For example, if you see something you fancy in the current location – a jewel, perhaps – you don't type GET JEWEL, instead you 'pick it up' with the mouse pointer and drop it into your inventory!

Moving around is conducted in a similarly visual manner – just place your mouse pointer on the door you want to go through, click the button, and you're off. No need either to EXAMINE objects, since placing the pointer on them and double-clicking on the mouse will get you a description in the text window.

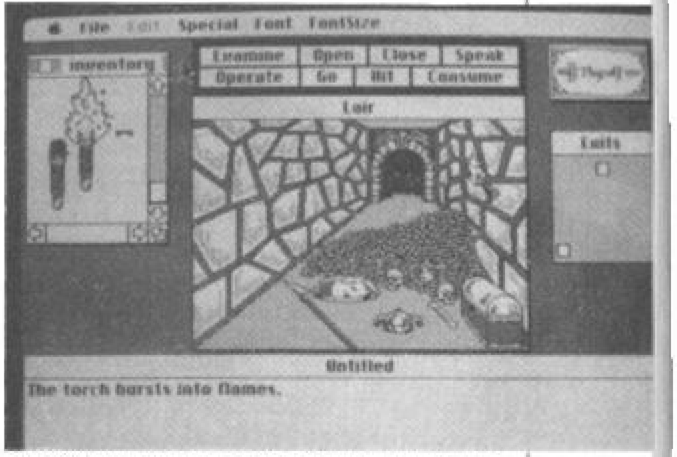
For anyone who hasn't played this sort of game before, the visual realism is stunning. Not only can you get and drop objects etc by moving them round the display, but you can even lift them up and see if there's something underneath!

In addition to the visual dimension, there is also extensive use of sound. Doors creak open, spectres laugh and gibber at you, dragons burst into flame with a deafening roar – all sampled sounds that add enormously to the enjoyment of playing.

That's the good news, but I'd be misleading you if I left you with the impression that everything's perfect. First, there are very few control options. You can EXAMINE, GO, SPEAK, OPEN, CLOSE, HIT, CONSUME and OPERATE – and that's all. To some extent this limitation is overcome by the OPERATE command which in effect provides a whole load of different functions, depending on the object to which it is applied. Thus you can use OPERATE to light a torch, lift a skull, pull a lever and so on.

In practise, this means you are OPERATING everything in sight, which doesn't help gameplay one jot. Naturally the stunning visual display and sense of realism compensate for this, but it's a pity they have to.

Your quest in *Shadowgate* isn't toweringly original – stop the baddy from unleashing the Behemoth on the unsuspecting world by grabbing a few magical artefacts. There is limited magical interaction in the game (using the SPEAK command) otherwise it's all search, solve, and SAVE as often as possible. But with a game system like this to build on, expect some impressive stuff in future.



The torch bursts into flames.

SHADOWGATE on the Mac. There's a torch burning in your inventory, and a dragon waiting up ahead to burn you

SYSTEM	93	ENCOUNTERS	62
CHALLENGE	80	LANDSCAPE	92

VERDICT 898

---

ever then you RESTORE and try again.

Once you've worked out what to do, doing it in time is no problem. To help you, however, you can select FAST or SLOW clock speed depending on your self-confidence. The puzzles are as ingenious as ever, but the first two chapters held a certain disappointment for me. In the first, the atmosphere was great, but the task too easy. In the second, although there's quite an exciting dog chase to keep you busy to start with, the locations were rather dull.

The third chapter is by far the best. First, the bustling city in which the assassination is to take place is a more lively, if rather limited, setting than the two previous scenarios. Secondly, the time factor seems better implemented in this section as the seconds tick away before the shot rings out, rather like the climax of the scene in the film Day of the Jackal.

Border Zone, like all Infocom's games, is faultlessly executed as far as the parsing and programming is concerned, but it didn't grip me as much as their other releases. I would have preferred a single scenario with more locations and more puzzles. As it is, the fragmentation of the plot (although original) seems to detract from the atmosphere, a failing not adequately compensated for by the added excitement of 'real time'.

RELEASE BOX		
C64/128	£19.99dk	OUT NOW
IBM PC	£24.99dk	OUT NOW
Apple Mac	To be announced	FEB 88
Other versions to be decided		

SYSTEM	93	ENCOUNTERS	86
CHALLENGE	79	LANDSCAPE	82

VERDICT 895

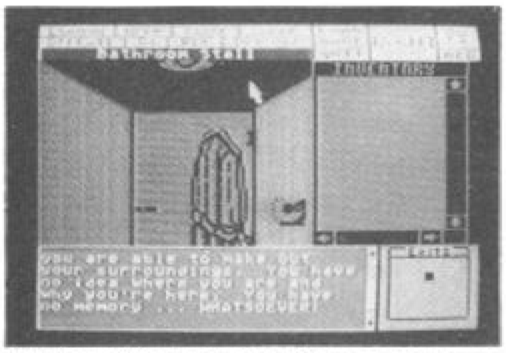
DEJA VU

MINDSCAPE squeeze 16-bit system into 8-bit.

DEJA VU was the first ICOM game to appear on the Mac and is also available on the Amiga and ST (for which machines it is highly recommened). It's also the first to be ported down onto an 8-bit machine. How does it look?

The system is the same as that used in *Shadowgate* (reviewed on this page) and has transferred surpisingly well onto the C64. Recovering consciousness in a house with a corpse upstairs you find yourself a prime suspect for murder. Can you escape and turn the tables on those who have framed you?

The screen layout is very similar to the Macintosh version, though the graphics window is larger to accomodate the Commodore's lower resolution. The program makes frequent disk accesses as you click your way through the rooms and out onto the streets which slows gameplay down somewhat, but accesses are surpisingly quick and the pace is no slower than, say, an Infocom game.



DEJA VU on the C64 – this is what you see when you recover consciousness – there's a gun in that coat, so grab it!

Mouse control isn't quite as stunning as it is on the Mac because, of course, you're using a joystick instead. Furthermore the manipulation of objects is not so graphically

SYSTEM	85	ENCOUNTERS	55
CHALLENGE	78	LANDSCAPE	82

VERDICT 819

was the first ICOM game to appear on the Mac and is also available on the Amiga and ST (for which machines it is highly recommened). It's also the first to be ported down onto an 8-bit machine. How does it look?

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RELEASE BOX

C64/128	£14.95dk	OUT NOW
Atari ST	£24.95dk	OUT NOW
Amiga	£24.95dk	OUT NOW
Apple Mac	£29.95dk	OUT NOW

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Mouse control isn't quite as stunning as it is on the Mac because, of course, you're using a joystick instead. Furthermore the manipulation of objects is not so graphically impressive because of the lower resolution and some smaller objects are barely recognisable until they have been double-clicked

Pat's Patch

This month Pat looks at Gilsoft's *Professional Adventure Writer.*

PAW has already appeared for the Spectrum range of computers and it has recently been converted to the Amstrad machines. There are slight differences of implementation on the two formats, with the Amstrad version running under CP/M. The Amstrad PAW also offers an incredible 60K of space for your adventure – and that's before the 40% text compression and ignoring the possibility of disk access for more data.

PAW has the best parser I've ever seen, with up to nine significant words of the player's command capable of being individually recognised. The first five letters of each word are scanned and these letters must all be typed unless the programmer has deliberately inserted shorter synonyms.

All the well-loved Quill commands are built-in, like get/drop/wear/remove all, and in addition a 'do-all' command is provided which allows you to create your own automatic routines to recognise and act upon commands such as 'Throw everything except the bucket down the well'. Objects can be normal, characters, or containers and those flagged as containers can be carried around and even put inside other containers.

Up to 255 locations can be defined and the descriptions for these can be as long as you like while around 450 messages are available in addition to the 60 provided. Again the messages can be of any length, only restricted by the overall memory limitations of your system. Using the 'Extern' action it should be possible to create random access text files on disk for even greater capacity. In fact it should be possible to use most of the RAM space for conditions alone...wow!

If you have any experience of the Quill you'll find PAW simple as it uses the same basic lay-out and coding techniques. PAW is much more flexible than Quill and with more commands but you needn't use all the extras at once.

One major difference between PAW and Quill is the way you feed information to the database. The CP/M version of PAW consists of two parts, a compiler, and an interpreter. Data is put together using a word processor in straight ASCII files, then passed to the compiler which checks syntax and creates a database. Then the interpreter is used to load the database and create a runnable game.

Unfortunately, while text editing is easy using your favourite word processor (or the simple text editor supplied on the disk), compilation takes ages when files start to get large. I'm currently working on a game which occiupies 30K uncompressed and this takes several minutes to compile. On the other hand, the speed of editing more than makes up for this. I would suggest that you tackle the coding first before writing reams of text. That way the file can be kept fairly short during the testing stages.

As for coding, conditions are split into several tables, 'Response' which acts on the player's input, several process tables, two of which tackle actions after 'Response' but before the 'What now?' prompt, and several more which are used as subroutines. These others can be 'called' from within any other table and nested up to ten deep. The most obvious use is in creating interactive characters and conversations but the sky's the limit once you put your thinking cap on.

Graphics aren't supported as such, although provision is made for you to patch in your own routines using 'Externs' – but with all that memory for text, who needs pictures? At last it's a practical proposition for non-programmers to create detailed, in-depth adventures to rival the big boys! Buy it!

A Pilgrim Retrospective...

Suspect by Infocom

'Never heard of it', said an Activision spokesperson when the Pilg rang to check the price of one of his favourite Infocom games. That just about sums up the treatment this little gem has had since its release. This is mainly because the game came out at the same time as *Hitchhiker's* and was rapidly eclipsed by its more famous companion.

That's a great pity, because it really is an excellent example of interactive character programming. Stuck in a large American country house, attending a fancy dress ball, you discover the corpse of your society hostess, strangled by the lariat from *your* costume. The police are on the way, the clock ticks remorselessly towards midnight and if you can't find out who did it then you're for the chop.

Almost all the many characters in the game can be addressed as you question them about each other, themselves, their love lives and their business affairs. You will spend time hiding in corners, listening for indiscrete conversations and rooting around in personal documents, as well as solving the usual locked-door and inaccessible-location puzzles.

The magic of this game lies in the complex movements and actions of the different characters, all of whom you must keep track of and check out during your investigation. A small map, lots of conversations, much brain work, and an excellent atmosphere make this one of the all-time adventure classics, and deserving of a wider following. The Pilg has seen versions for all the usual Infocom formats, including Amstrad CPC, but check with Activision for availability and pricing.

The Pilgrim's Players' Guide to Hitchhikers

Ye Third and Final Parte

Aha, thou hast confonted the **Screening Door**, eh? If you've done the **Maze**, then you'll have enough common sense to **Get no tea**. Any sane door, on seeing both **no tea** and **tea** is going to have a fit, but don't go west until you've got as high a score as possible. Having a drink at this stage might help.

Marvin can **repair the hatch** and of course you did remember the **tool** as pointed out in the last issue, didn't you?

Ah well, you're nearly there. Can you bear it? Can you bear the fact that you have almost finished a program that cost you....Yes, well, less said the better, eh? Take your trusty belongings, wear your gown, and descend through the hatch into a brave new dump...er...world.

Next month: The first instalment of the **Pilgrim's Players' Guide to...*The Pawn.***

Next month...

Sappho's Shades Diary returns with more whispers from the outrageous Micronet multi-user game, and the White Wizard makes another guest appearance with a survey of role-playing games. Don't miss it!

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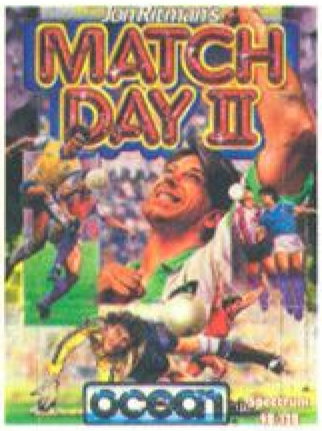
THE PHENOMENON CONTINUES...
GAUNTLET
II
ATARI



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*ST version imminent

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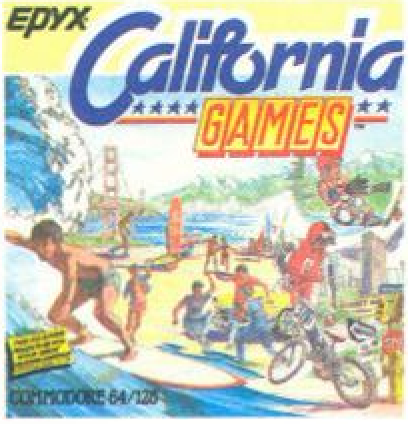
CBM 64 disk	11.99	**8.95**	A135CD
Amstrad cass	9.99	**7.95**	A135AC
Amstrad disk	14.99	**11.95**	A135AD



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Amstrad cass	9.99	**7.95**	A126AC
Amstrad disk	14.99	**11.95**	A126AD
Atari ST disk*	19.99	**14.95**	A126ST

*ST version imminent

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CBM 64 cass	9.95	**7.95**	A129CC
CBM 64 disk	14.95	**11.95**	A129CD
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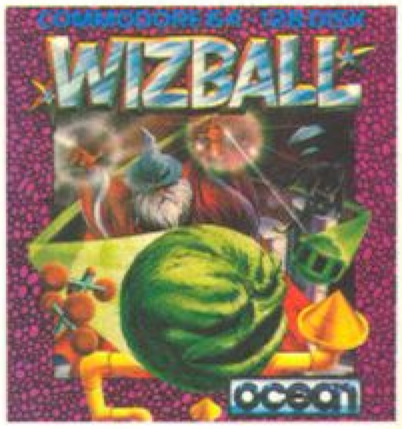

720°

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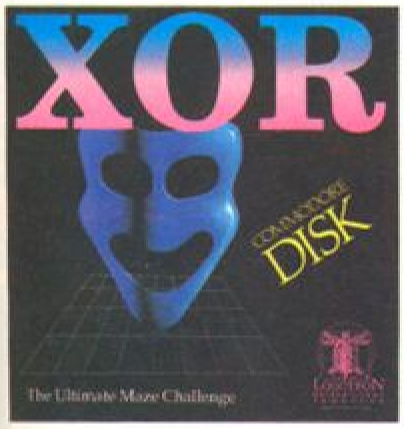

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Do you already own a computer
If so, which one do you own? ....

MORE BANGS FOR LESS BUCKS

Choosing a drum machine involves first assessing your needs, then checking out what's available, and finally trying to get the most 'beats per buck'. It can be a nightmare. *Keith Ansell* raises the tempo and rounds up the competition...

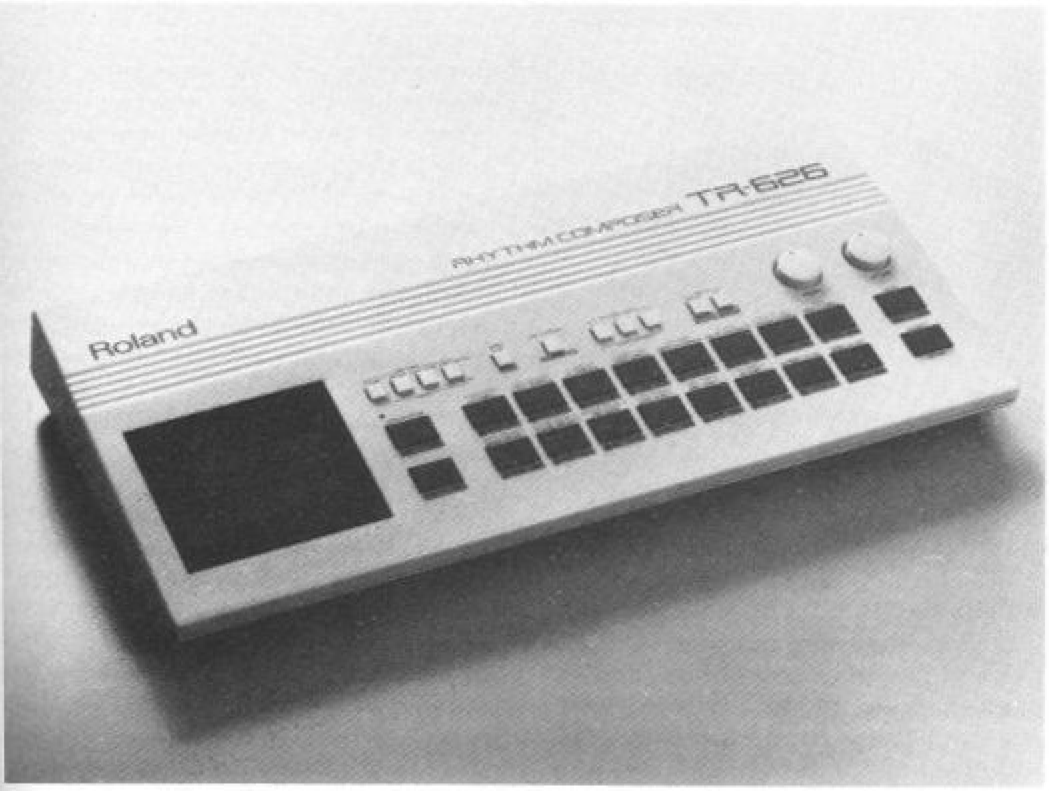
Are you sitting comfortably? then I'll begin...

Once upon a time, bands of large, hairy creatures roamed the earth. These 'drummers', as they were known, were subject to fits of uncontrolled violence and aggression, and required frequent offerings of hop and barley ferments. The good musician-folk of the time were greatly afraid of the drummers, and tolerated them only because they emitted noises which were strangely attractive to the people, and which no other creature could make.

Then someone had a revolutionary idea. 'What if we made a machine that could generate all the noises made by the drummers, but without taking up so much space, without requiring constant propitiatory libations, and without the same tendency to run off with our wives and daughters when we're not looking?' And so was born the concept of the drum machine, or as it is more trendily called these days, the Digital Rhythm Programmer.

The first automatic rhythm devices were steam-driven fairground organs, which had real instruments controlled by pianola-type rolls; these were followed by the great Wurlitzer cinema organs of the thirties, and then, in the sixties, home organs featuring preset rhythm accompaniments. Gradually manufacturers realised there was a market for the rhythm units by themselves; **Korg** and **Roland** were among the first to produce self-contained preset machines featuring, for example, Foxtrot, Samba and Swing rythms.

The first digital machines were developed by **Roger Linn**, sometimes referred to as the 'inventor of the drum machine'; some of his machines offered remarkably sophisticated facilities for the time including features such as touch sensitivity, which are still not commonly found in today's machines. Then **Sequential Circuits** introduced the ability to change each voice's pitch and level on each beat with their Drumtracks machine, and E-



Roland TR626 – 30
built-in sound sources for you to play around with, plus 48 preset rhythm patterns and space for 48 programmed ones. MIDI implementation is excellent, including song pointer, programmable trigger output and a tape sync function.

mu Systems were one of the leaders in developing sampling drum machines with their SP-12 Drum Computer. Most of today's advances are in terms of increasing affordability, and the facilities offered by recent introductions like the TR626 would have been envied by major recording studios a few short years ago.

Who needs 'em?

If you are a drummer, then clearly you can manage without a drum machine at all, although a rhythm programmer can still offer you a lot, particularly if linked to an electronic kit - a wide range of sounds to play with, the ability to create rhythms that would be physically impossible to play, the opportunity to practise in the dead of night without the neighbours calling in the police; above all, perhaps, a huge extension to the creative possibilities of your medium. And you no longer need to be concerned about a machine shackling you to its tempo: a device like the Kahler Human Clock enables you to dictate the tempo of the programmed rhythms from your live playing.

If you are a non-drummer who requires some sort of percussion capability, then there are several possibilities. You may just want some rhythm to back up your keyboard playing, in which case a preset-only drum machine or a home organ with rhythm presets could be enough. These range from acceptable to naff, and generally you get what you pay for.

Alternatively, you may want to use rhythm creatively in home recording or performance, and here things get more complex. Dedicated rhythm programmers (we will look at some examples later), can offer terrific value for money. They have their individual strengths and weaknesses, but all of them suffer from the restriction of a single line display for programming, and all of them limit to some extent the sounds you can play. If you want to see all the drum voices you are programming at the same time, and have more flexibility in the way you programme them, then you will need a computer and sequencing software; and if you are programming your rhythms on a sequencer, then you could dispense with the drum machine and opt for a multi-sampling keyboard or sounds to play with. You pays yer money (in the case of samplers, rather a lot of it!) and takes yer choice...

Facilities

Most of the criticisms levelled at drum machines in the past have been implicit in the word 'machine' - inflexibililty, ruthless and monotonous accuracy, lack of feel, etc. (Perhaps that is why manufacturers now seem to avoid the word in their product names). However, many of these criticisms are becoming outdated as the technology

MIDI Panel of Experts

We throw your questions at the panel – this month Harold Ingram tells you how NOT to get into MIDI!

Here's the man who's answering your question, James. We couldn't fit his photo in last month, so here it is just for the record.

Dear ACE MIDI Panel,

First, I think the idea of a panel is a great idea and wish you the best of luck. but do questions have to be about MIDI? What about computers and music in general? For example, I find MIDI quite expensive, but I'd still like to use my computer (a Commodore 64) to make music. What are my options?

James Brinston, Surrey

Howard Ingram replies:

The problem with any new technology is that it is always going to be expensive. Advertisements will try to woo you into believing that you need MIDI but never forget that advertisements are trying to 'educate' you into buying MIDI. In advertising parlance, the word 'education' can always be substituted for 'brainwashing'.

To answer your question, I would agree that MIDI is expensive, but if you wait two or three years the second-hand market in MIDI will have expanded, and it will be possible to buy equipment at more affordable prices. In the meantime, I'd suggest that you consider buying some non-MIDI musical software because, although these may have limitations, they are often excellent introductions to computerised music-making.

It's all too easy to believe that if you aren't using the best available equipment then your music will, in some way, be second-rate. That's nonsense. I firmly belive that you create music to the best of your ability with the equipment available to you. Buy what you can afford and explore every possibility of that software.

You are fortunate in owning a CBM64 because it is possibly the best computer to own as regards music-making on a budget. This is due almost entirely to SID (the Sound Interface Device chip) which is dedicated totally to musical applications. It is possible to create complex pieces of music using no more than the Commodore 64's user manual and a series of POKE instructions. More importantly, the introduction of SID meant that there were soon a plethora of software packages for your time and money.

Probably the best non-MIDI software available for the C64 is *The Music Studio* by Activision. This program requires you to use the joystick to place notes on a musical stave, and then by pressing the 'fire' button on the joystick you can listen back to your composition. There are excellent editing facilities which allow you to repeat sections, change entire sections, change keys, and change sounds. The sounds themselves are a bit questionable, and as usual the 'Guitar' pre-set sounds nothing like a guitar, but you can even change the pre-sets, adding and subtracting filtration, ADSR and all of the other parameters. But wait, it gets better! Having written your first work, you can print it, complete with a set of lyrics if required.

The only drawback is that *The Music Studio* does require some knowledge of musical notation to begin with, but don't be put off if you don't know a crotchet from a minim, the extensive booklet which accompanies the software will make life easy for you, and you'll be surprised at how quickly you actually pick up the intricacies of musical notation. I recommend *The Music Studio* highly.

I also took the opportunity to visit some local software emporiums, just to see what was readily available off the shelves. Two software packages predominated, these being *Ubiks Music* and *Micro Rhythms +* (both from Firebird), priced at £1.99 and £2.99. At these prices it's unfair to expect anything special, but I was surprised at the quality of the sound. The *Ubiks Music* program supposedly turns your computer into a sythesiser (where have we heard that before?) but the main drawback is in using the Qwerty keyboard. The sounds are good, but it's difficult to play. *Micro Rhythm +* is equally limited in versatility, but it's easy to play and some very interesting rhythms can be achieved. I'd recommend it and at these pocket money prices you can't go far wrong. To help you on your way I've twisted the editor's arm (Ouch! Ed.), and he has agreed that ACE will send you both *Ubiks Music* and *Micro Rhytm +* to get you started. Good luck and have fun! ●

OK So Howard twisted my arm. In future, however, we'll be giving some free software to everyone who has a letter printed in the MIDI Panel section – so if you've got a problem, get it solved, and get some software into the bargain!

advances; it is now possible to achieve reasonable subtlety of performance from a drum machine, and the sounds themselves have come a long way from the tin-can and cardboard-box effect of the early models.

The facilities offered by modern drum machines vary enormously, but most will allow you to choose between selecting preset patterns or programming your own; most have a number of buttons which can be tapped to play the drum sounds in 'realtime', (although in most budget machines these will not respond to velocity or dynamics); and most can be played and/or programmed via a MIDI cable from, say, a keyboard or a sequencer, (in which case most machines will respond to velocity information if your controlling instrument transmits it).

You could, (if you sold enough grandmothers), pay £2,000+ for a drum machine – something like the E-MU SP 1200, for example – but we will assume that this is not on our menu. At the other end of the scale, it is now possible to buy good, fairly recent but now discontinued machines such as the Yamaha RX21, for around £150 in music shops, or even less from the classified sections of music magazines. Such machines are still used effectively by many people on tight budgets, and it may be worth outlining what facilities they can offer.

All the machines mentioned in the boxes give good value for money in one way or another, and other combinations fo facilities will be found on other machines.

The favoured way to produce rhythm sounds these days is by the sequencer/sampler option, but as the cheapest suitable samplers cost as much as the most expensive drum machines, you have to be taking it very seriously to follow that path. If you already own a computer, then a software sequencer driving a drum machine is probably the most cost-effective way to produce good quality rhythm sounds, and gives you great flexibility and control. Whichever route you choose, you're sure to find a rhythm programmer an exciting investment that can add depth and drive to your music.

Yamaha RX21

The RX21 is a fairly basic machine, with a 'standard' kit of snare, bass, three toms, open and closed hi-hats, cymabl and handclap; it has 44 preset patterns, ranging from variations on 16-beat patterns for jazz or rock, to reggae, disco, and Latin American rhythms, and including a selection of fill and rest patterns. As is often the case with presets, these do tend to have a rather inflexible, mechanical feel, and they are best regarded as a basis on which to build, using the 56 user-programmable pattern memories.

Programming, either in real-or step-time, is somewhat easier than on many machines as the 9 instrument-voice buttons are not required to perform any other function, such as pattern selection. In fact, the usual trade-off between button cost and ease of use has been fairly well-managed here, with multiple key-presses kept to a minimum. The sounds produced by the RX21 are dry and really need treatment via an external reverb unit to be acceptable by the latest standards. Bear in mind, though, that you can only treat all the sounds, or none, as the machine only has stereo outputs. However, some flexibility is provided by the ability to programme different volume and accent levels for each instrument, and if your needs are not too elaborate, and your budget is tight, then the RX21 or its Latin equivalent, the RX21L, may be worth thinking about.

Roland TR626

Moving up a notch in the price scale enables us to consider Roland's latest machine in a long line of successses, the TR626 for £350, a lot of extra facilities become available. The first thing to notice is that we now have thirty on-board sounds to play with, enough to give us a choice of different basic kits and a wide selection of Latin sounds. Up to eight of the voices can be sounded simultaneously, (with some fairly severe limitations on groupings), and the sounds themselves are excellent – clear, believable, and with just the right amount of reverb.

Any of the main drum sounds can be routed either through the stereo outputs or through one of the eight seperate outputs for individual effects treatment, and all the sounds can be tuned up or down by seven semitones; the tuning can be programmed to change within patterns, as can the accent level and overall level for each instrument; these features combine to produce great flexibility, limited only by your programming patience.

Patience is a necessary virtue, however, since the key-press sequences required to programme the TR626 are quite difficult to memorise, although the learning curve is shortened considerably by the operation chart supplied with the machine. The beautifully produced but poorly-translated manual is decidedly hard going.

What else do you get for the extra shekels? Tape sync capability, programmable shuffle and flam effects which actually work, MIDI transmit as well as receive (great for programming base-lines for your synths), and quite a lot more that space does not permit...etc. There is even a section in the manual headed 'Writing Flames' – now there's a novelty!

Pad The Beat

Some drum machines allow you to play their sounds from external controllers, such as drum pads or electronic drum kits (EDKs). Even for a non-drummer, this can offer great improvement in the dynamic feel imparted to rhythms – sticks bouncing off a surface induce a very different response in the player from fingers tapping little buttons, and even more so from the intellectual exercise of programming patterns in step-time. The Cheetah DP5 is likely to be the most affordable EDK yet produced, at £159.95, excluding cymbals – (and only the most expensive sampling systems can offer convincing cymbals). Other, more established, makes include Roland and Simmons, and their products usually consist of the kit itself and a 'brain' which actually produces the sounds, allowing you to synthesize the sound of each instrument.

Cheetah DP5 – all this for £159.95

Alesis HR-16

£450 brings you what may be the best specification possible for under half-a-grand. I say 'may be' advisedly, since we have been waiting for several months for Alesis's first drum machine, the HR16, to reach the shps. If it gets there before you have given up and bought something else, expect it to have 48 high-quality percussion sounds, any 16 of which can be assigned to the velocity-sensitive pads and played simultaneously, (incuding the same sound 16 times if you like). Four fully-assignable outputs,100 pattern memories, (which can also be used to store instrument, tuning, and panning data for recall from a sequencer), tape sync, and 100 song memories are among the other goodies this machine will offer – when it eventually makes its appearance.

Cheetah MD8

At a similar price level to the Yamaha, (£139.95,to be precise). Cheetah's MD8 should be arriving in the shops before too long. Although it has proved impossible to get hold of one for review, I understand that it will include features not found on many more expensive machines, such as the ability to load low-cost libraries of alternative sounds into its eight voice-slots, and an integral pad bus to enable the MD8 to be dynamically controlled from Cheetah's DP5 electronic drum kit (illustrated elsewhere in this article).

Cheetah MD8

Add to this its 16-song capacity (the RX21 has four) and separate sound outputs and things look very promising for the MD8. The critical factor, of course, will be how good it sounds, but as long as the sound is acceptable, the ability to escape from the tyranny of built-in instrument voices should make it a winner at that price. ●

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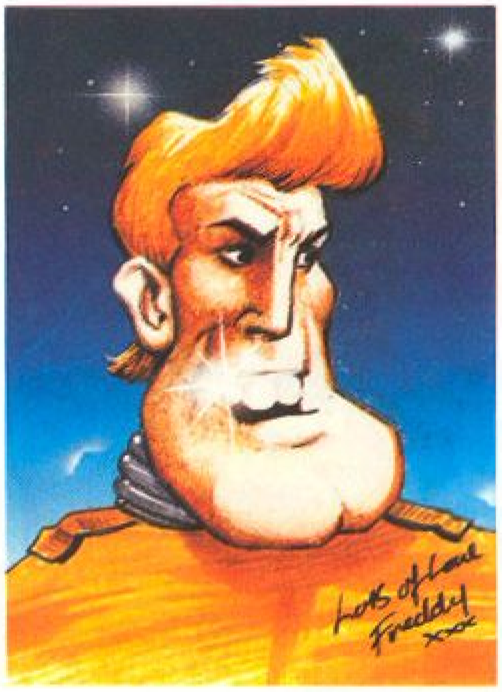


FREDDY HARDEST

Get tough with the Amstrad version

- **Access code** = 897653
- **Micro sounders** can be kicked, punched or ducked.
- **Robots** can be kicked or shot.
- **Aliens** can be kicked or punched.
- The **lifts** are dark blue squares and are activated by standing on them and pressing up or down.
- **Hanging bars** are above gaps that are more than two blocks wide. Press up when on these to kick the micro sounders and robots.
- You can't fall off **ledges** without dying, so don't do it.
- The **red squares** are nuclear fuel for the ships so pick them up.
- **Drop** the fuel on the squares marked with an 'N', then go to the computer terminal to see which ship is being fueled.
- It is not essential to get the **captain code**, but you do have to programme the ship to hyperspace.
- The holes in the **passage ways** are useful for moving around the base.
- **Always** check each terminal.
- The four captain codes are: **FENIX, AUDAX, ARTEX, BORAX.**
- If you get the captain code wrong when boarding a ship you can **try again** using a different code.

MARTIN COLES, Derbyshire.

TRICKS 'N' TACTICS

Achieve hi-score mastery with this month's selection of expert hints and tips. *Nebulus, Bobsleigh, Driller* and other recent releases yield up their secrets...

BOBSLEIGH

Bob 'Sleigh-em' Wade plays it ice cool on the slopes...

First, equip yourself with an amateur two-man bob. For the first three races make sure you get fitness training for the team until they are super-human. Then train them every other race to keep them at that level.

When you are choosing your runners you should follow these rules: if both air and ice temperatures are below -3 then use type 4; if the air is above zero then use type 1. In between these levels you should use types 2 or 3. 3 will give you more control but there isn't much to choose between their effect.

Crucial starting

The start and early part of the run are the crucial time. Failure to get a maximum strength push start or clipping the ice wall on one of the early corners will cost a lot of time.

The waggle start is easy enough, but don't get carried away and forget to jump in the bob, because one crash can ruin a whole season. This is particularly true in the first few races when cash is tight and if you don't do well you'll soon be bankrupt.

On the first few corners you pick up speed quickly and must avoid the wall because at this stage they can literally take seconds off your time.

Right on track

Try to keep to the bottom of the track on the turns, using the vertical inner wall as a guide. Don't ride high on the bends because you risk a crash coming out of them. More likely is that you will set up a pendulum effect that will make control extremely difficult on the following two or three turns.

The medium length turns are the easiest to deal with. The hardest are the very short kinks and long curves. The kinks can throw you off at a crucial moment either entering or leaving a turn, while it's easy to lose concentration on the long turns and let the bob drift just too far up or down.

Winning through

You'll need to win consistently to get enough sponsors cash to buy the expensive bobs. There appears to be little difference between the two and four-man varieties, so go for two-man at first because it's cheaper. Once you have an Olympic bob you just need a top three season finish to get into the Olympics at Calgary.

THUNDERCATS

Miaow for ever with this infinite lives poke on the C64

Type in and RUN this listing:

```
100 DATA
169,0,141,26,4,169,208,141,
27,4,76,132,255,169,173
110 DATA 141,16,237,76,13,8
120 FOR L=53235 TO 53255: READ A:
POKE L,A: NEXT
```

Now enter:

NEW (return)
LOAD (return)

When READY appears, enter:

POKE 1011,243 (return)
POKE 1012,207 (return)
RUN (return)

The game will now load.

THE HACKER, London.

DRILLER

If you've lost your way on the vast moon of Mitral, these non-machine-specific tips are just what you're looking for. Incentive's very own IAN ANDREW gives us the low down......

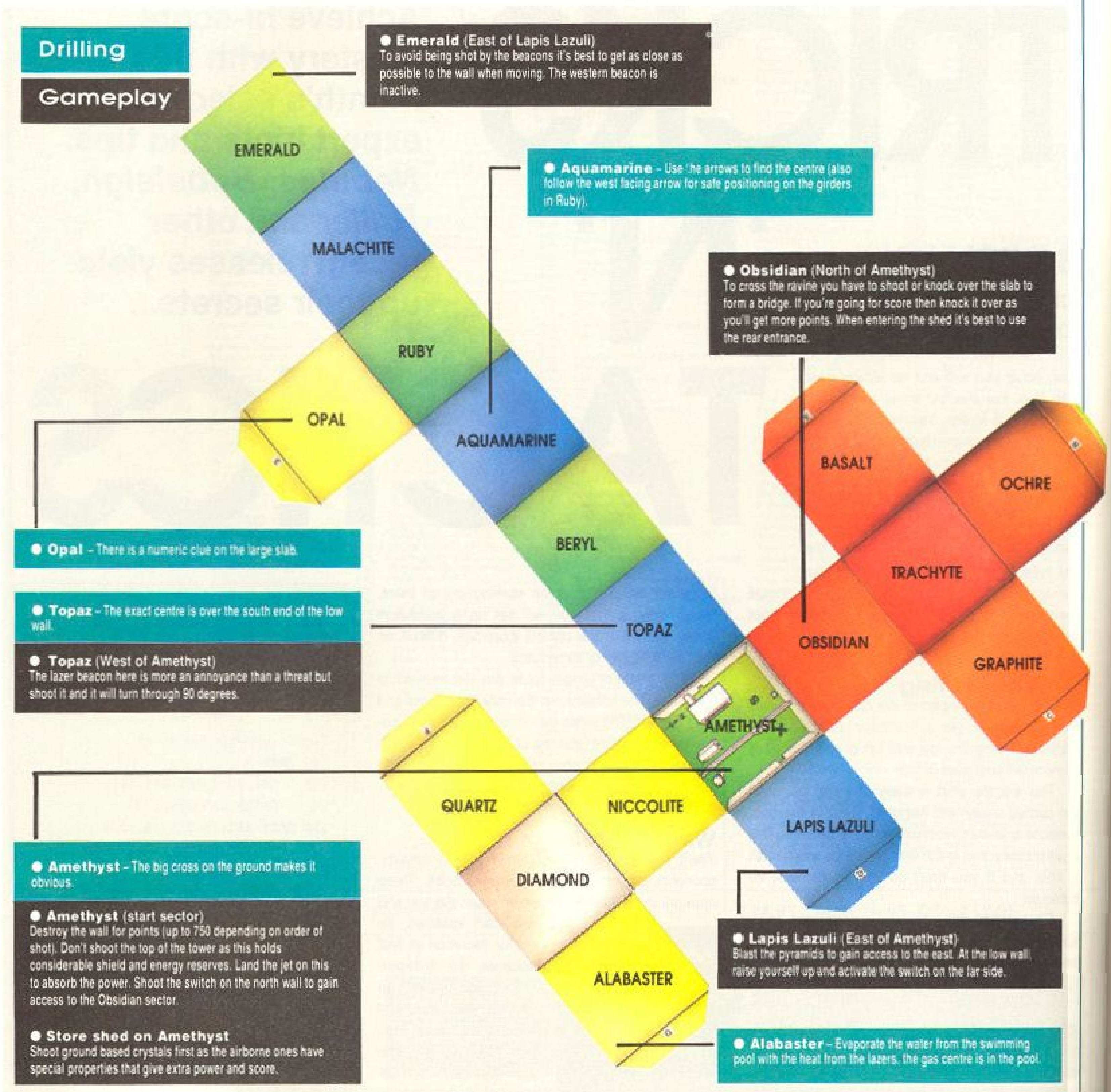
General tips

1. Activating **teleporters** reduces your travel time around the moon and to activate them you should initially head **west** to **Topaz**. Drive onto the lift, activate the lift by firing at the upwards switch. Enter the suspended complex and find the hidden tunnel. Follow the tunnel to complex **K1**. Destroy the **four blocks** to materialise the teleporters.

2. The **jet** is in one of the hangars in the Aquamarine section and the best way to get to the sector is to go west to Topaz, over the wall and west again to **Beryl**. Sever the **powerlines** to disable the vicious downwards pointing lazer beacon and then set the symbols all to **squares** (including the building). Now the doorway to Aquamarine will be revealed.

3. To gain access to the **Diamond** sector (see map) first set all the large switches in the Niccolate, Alabaster, Opal and Quartz sectors to **down** so the four lights are illuminated. This destroys the southern wall in **Opal** allowing access to Diamond.

4. To pause the game – call up the information screen as this stops the clock.



● **Emerald** (East of Lapis Lazuli)
To avoid being shot by the beacons it's best to get as close as possible to the wall when moving. The western beacon is inactive.

● **Aquamarine** – Use the arrows to find the centre (also follow the west facing arrow for safe positioning on the girders in Ruby).

● **Obsidian** (North of Amethyst)
To cross the ravine you have to shoot or knock over the slab to form a bridge. If you're going for score then knock it over as you'll get more points. When entering the shed it's best to use the rear entrance.

● **Opal** – There is a numeric clue on the large slab.

● **Topaz** – The exact centre is over the south end of the low wall.

● **Topaz** (West of Amethyst)
The lazer beacon here is more an annoyance than a threat but shoot it and it will turn through 90 degrees.

● **Amethyst** – The big cross on the ground makes it obvious.

● **Amethyst** (start sector)
Destroy the wall for points (up to 750 depending on order of shot). Don't shoot the top of the tower as this holds considerable shield and energy reserves. Land the jet on this to absorb the power. Shoot the switch on the north wall to gain access to the Obsidian sector.

● **Store shed on Amethyst**
Shoot ground based crystals first as the airborne ones have special properties that give extra power and score.

● **Lapis Lazuli** (East of Amethyst)
Blast the pyramids to gain access to the east. At the low wall, raise yourself up and activate the switch on the far side.

● **Alabaster** – Evaporate the water from the swimming pool with the heat from the lazers, the gas centre is in the pool.

TERRORPODS

The map and the tips – brought to you by CHARLEY ALLAN of Ipswich. Nice one, Charley.

1. Always use your drover, as this doesn't use up fuel; you can then trade your remaining fuel. Park the DSV at Z=0.

2. Going round to the right, radio to *every* installation, making them indestructible (INDE) until you reach your start again (X=34,000)

3. While moving around
a) collect all fuel at pick-up points
b) trade for as much detonite a possible
c) buy *all* alluma at manufacturing centres and alluma mines for fuel

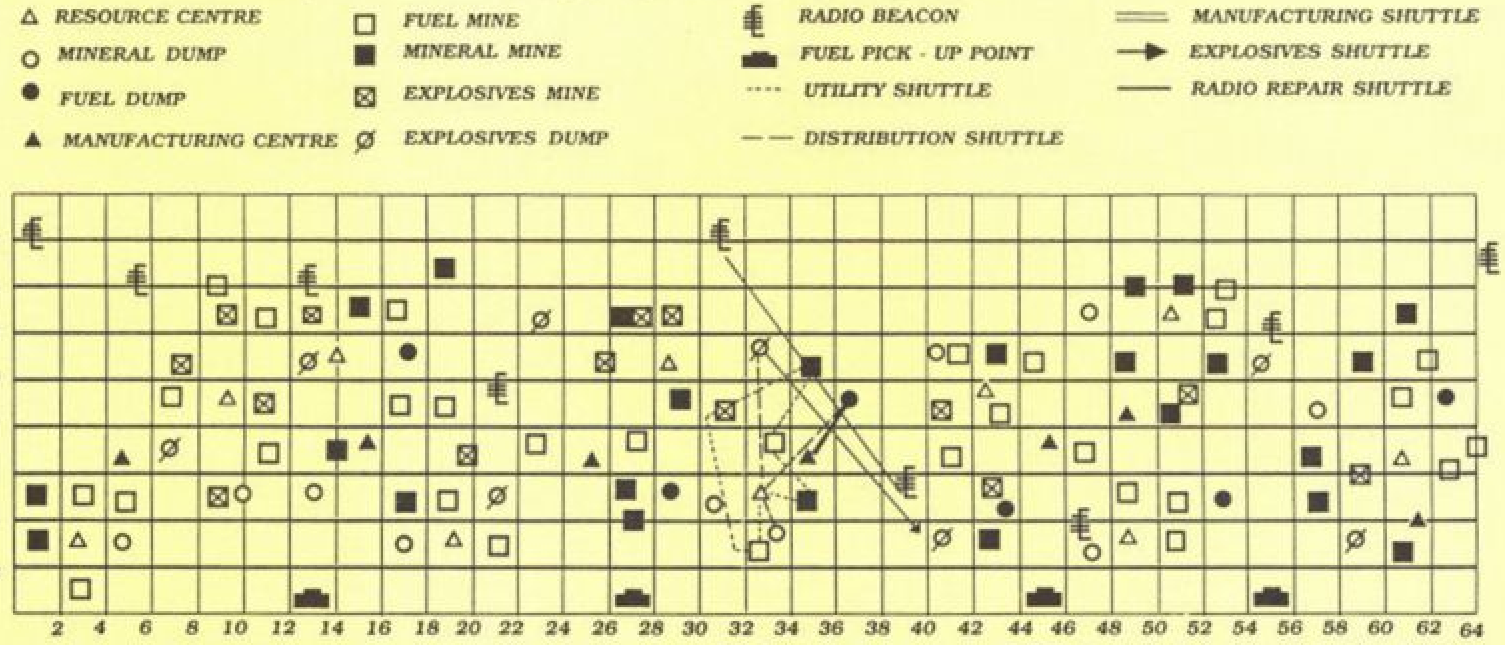
4. When you get back to the start, go round again (but not INDEing) giving alluma to the manufacturing centres for fuel. When it has enough alluma (see below) it will say 'component ready'. Trade again. If you have enough aluma (see below) it will give you the option of buying the component – do so. The greed spaces at the side will show which components you have. Remember – each manufacturing centre will only produce one component, but the shuttles will still give it alluma, so keep checking.

5. You will need to go round several times before you have the full Terrorpod. Keep saving at regular intervals. Always shoot spoilers, dodge missiles and missile Terrorpods.

6. When you finally build the Terrorpod (on level 1 this takes about an hour) you will have to missile 15 Terrorpods in 8 minutes. Luckily you will be given 18 missiles. They probably won't all be in the same screen – use your map to find them.

Manufacturing centres

Co-ordinate	Aluma needed to build	Aluma needed to trade	Component
34, 600	100	100	1
45, 640	300	300	2
48, 920	400	400	5
61, 828	500	500	6
4,412	100	1 00	3
15, 212	200	200	4



NEBULUS

Tower Tumbling with Bob Wade in Hewson's instant classic

To start with you have to learn some general rules. Patience is vital and panic is lethal.

The spinning object that enters at intervals can arrive at the most inconvenient of times. Get used to the intervals at which it arrives and wait at doorways, lifts or stairs where you can easily avoid it. It may seem like you're wasting time but getting knocked off after bulling ahead will cost you more.

Disappearing blocks are a nuisance. You can guess where some are located but the only way to be sure is to find out the hard way and then make sure you remember where they are.

When you come through a door always be ready to shoot a ball, but don't panic or you'll end up jumping straight into it. Also try to stay cool if you do get knocked down; it doesn't necessarily mean you'll die and there's usually enough time to recover on the Spectrum version, but less time on the 64.

If you are gripping on to a lift by just your toes, don't turn around or you'll slip off. Just use the lift and it will centre you on it.

Tower 1 - Tower of Eyes

There's only one nasty feature here and that's near the top. You take a lift past a black ball and then appear to have an easy route to a door. Beware, because the first block disappears plunging you straight down to the platform where the ball is waiting to bounce you down.

Tower 2 - Realm of Robots

Go left at the start. For the first time you have to jump over robots as they cycle through their patterns. The first one is at the bottom of the tower, and the second one halfway up. You have to leap over the second and on to a waiting lift.

At the top of the lift there's another robot to walk under. Be careful of the timing here because the blocks underneath it are conveyors and can take you by surprise.

At the top of the tower are two long spiral walkways. On the first one go through the door at the bottom to take a short cut to the lift. On the second don't use the door as it plunges you downwards on the other side.

At the top of the second spiral, after avoiding the robots, there's a disappearing block that drops you onto a lift. Pause before doing this because otherwise the timing is such that you'll nosedive straight into a robot.

Tower 3 - Trap of Tricks

A very nasty trick at the start. Go left, shoot the ball, through the door, up the lift, walk right and wait. The spinner will appear and knock you down to the next level, which was bypassed by the lift. Walk right, block disappears and you can take the lift up.

WIN! WIN! WIN!

Yes, every month Tricks 'n' Tactics gives you the chance to win oddles of lovely software. How? Simply by sending in tips, pokes and maps for the games we all want to beat.

This month's biggest prize goes to Charley Allan for his Terrorpod map and tips. Charley gets **SIX** games for his Amiga, including this month's releases **Insanity Fight, Test Drive, Eagle's Nest** and **Western Games.**

But he's not the only winner. Martin Coles' Freddy Hardest tips get him **Matchday 2** for his Amstrad and the Thundercats tips earn The Hacker a copy of **Rampage** for his C64.

But look – you only win if you send in tips. So write to

TRICKS 'N' TACTICS, ACE
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BATH, BA1 1 EJ

Tower 4 - Slippery Slide

Hard right from the start and jump the two robots as fast as possible before the spinner arrives. Up the lift and shoot the flashing block to your right. Then proceed to the left, shooting the blocks in your path.

There's a tricky section halfway up where two flashing blocks have to be removed. The first is easy but to get the second you proceed to the left, after shooting the first block, shoot the ball and on the far left of the same platform you can shoot the block around the corner.

After the next long lift ride, wait for the lift to go down and then jump the gap to the door. Make sure you jump early or you will bang your head on the block above and fall back down onto the lift.

Last nasty trick is at the top. Don't go down the large column of disappearing blocks, jump over them and walk to the far right. Allow the spinner to knock you down and then take the lift to the top.

Tower 5 - Border Path

Take the first lift up to the second platform, the first is suicide if you get off. Walk left and shoot the ball. Edge forward until you can shoot the flashing block round the tower, then walk forward over the disappearing block and take the lift.

After the two spirals, jump to the left, fall onto the first lift, shoot the two flashing blocks. Take the lift up - you will get knocked off but it is essential to get the height to remove the circling eye. Backtrack and take the second lift.

Jump left, over the first eye, shoot block to the left, jump back over eye, walk right and down onto the lift. Take the lift up and jump left.

Try to cope with the rest yourself. Higher up you'll want the last door in the first spiral of doors and the third door in the second spiral. Watch out for two eyes that appear just when you're about to deal with a ball.

Tower 6 - Swimmer's Delight

Not much to say about this one, except that there are no disappearing blocks at the bottom, so try anything and everything. And as for the double-step spiral at the top - bottle it as fast as possible while the robots are appearing.

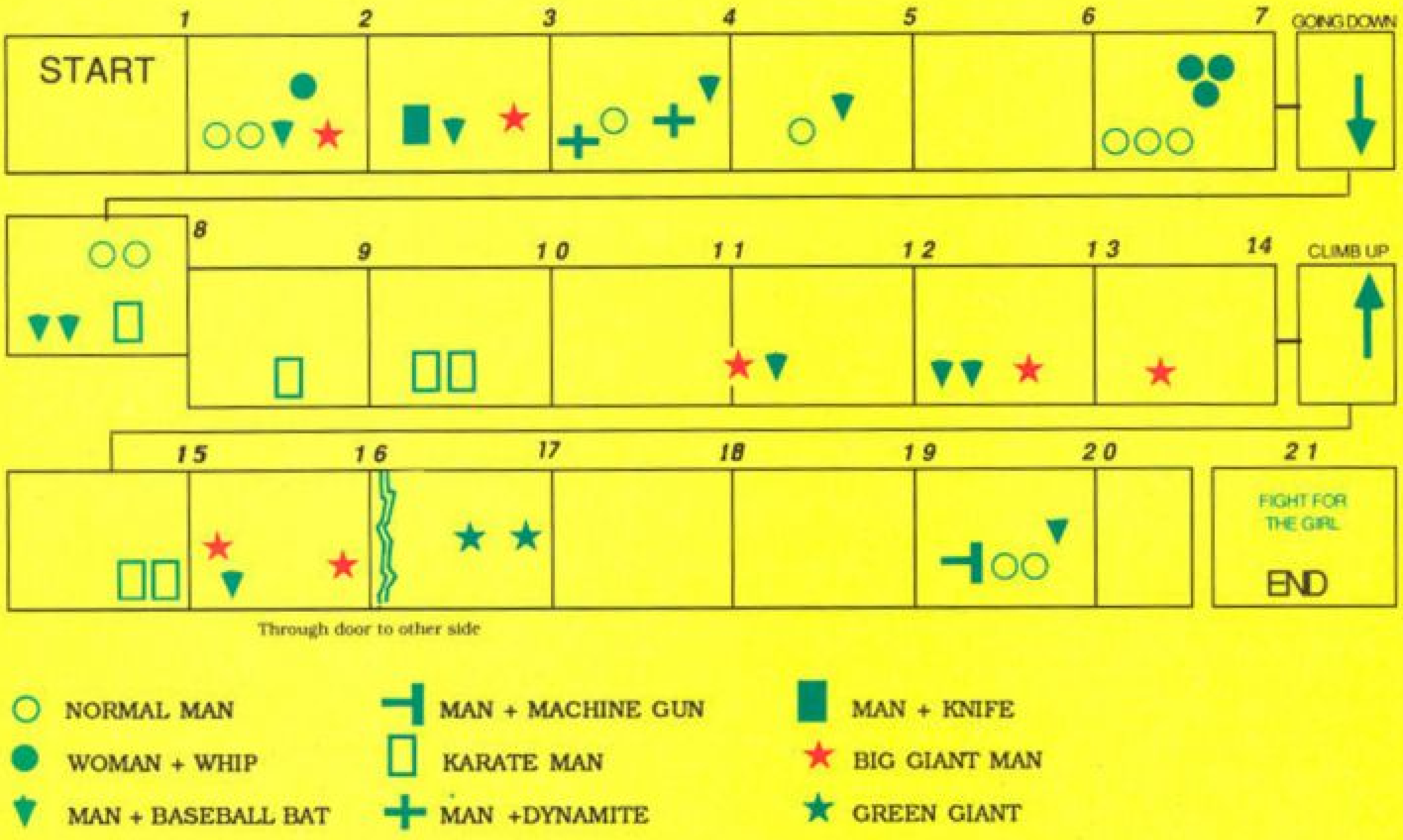
Tower 7 - Nasty One

Aaaaaaaaaagh! Help me please!

IN THE ARCADES

No contest this month for the arcade tip prize; PATRICK CADONA's beautiful map and detailed tips for DOUBLE DRAGON beat the field by a mile. Match this sort of standard and you could win yourself some real nice software.

1. Simply keep going right
2. Kill the two unarmed men, kill the baseball man and pick up his baseball to kill the giant man. Also kill the woman and take her whip.
3. Use baseball bat to kill giant, pick up barrel to throw. Beware of man throwing the knife.
4. Beware of exploding dynamite. Pick up box to throw, kill all men, pick up baseball bat.
5. Beat baseball bat man with flying drop kick
6. Keep going, taking care not to fall down the hole.
7. Wait beside the door for baddies to come and then hit them with the bat. Also try to kick them on to the pulley belt, which kills them – or you – instantly.
8. Kill the karate man using first a kick move then switching to punches. Watch out for his flying drop kicks.
9. Jump down on to the ledge andn kill the karate man.
10. Kill karate men.
11. Jump this hole or you're a gonner!
12. Kill giant and baseball men as usual.
13. Watch out for men jumping down from trees.
14. Climb ladder after killing giant.
15. Don't fall back down the edge. Pick up boulders to throw and kill karate men.
16. Pick up barrel to throw on giants, and then just generally beat them to death.
17. Watch out for the giants smashing out of the wall. Kill them.
18. Watch out for the spears thrusting at you. Time your run precisely.
19. Watch out for the stone blocks trying to crush you.
20. To save the girl, kill the men – especially the one with the machine gun .
21. Now you and your partner have to fight for the girl; the one with



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ACE PINK PAGES

Welcome to the ACE Pink Pages – our regular Buyers' Guides to home computer hardware, software and peripherals. The software and peripherals guides are featured alternately, with the peripherals taking their turn this month. Watch this space in the next issue for the lowdown on 50 games we recommend.

This month's guide is intended to give you the information you need to buy the right hardware and peripherals at the right price. We've listed details of 12 basic machines and their various models, plus consoles; and in the peripherals section we've given the lowdown on peripherals we recommend. Each month we'll be updating the information to keep you informed of the swings and roundabouts of prices and availability.

We've also got the first of our *Reader to Reader* pages; in here you're able to place your own small ads – *free, gratis and for nothing.* Is there a better place to sell your machine when you want to upgrade? In *Reader to Reader* you'll also find Adventure Helpline (a boon to all those stuck in a dark room with a goblin), Pen Pals, and much more.

The Pink Pages are a valuable reference guide to anyone making a computer hardware, software or peripheral purchase, and to those seeking help from or contact with other readers. They're *your* pages; so use the form on pages 120-121 and get yourself into print.

The ACE buyers' guide is essential reading for anyone who is considering buying a new computer, whether it will be your first ever foray into the micro market, or you hope to upgrade your current system. We've compiled a list of features and specifications for all the models suitable for home use in the shops. Graphics, sound, software availability, prices, bargains..It's all here.

Before buying

Even if a new computer is only a dream at the moment, the buyers' guide will make it clear just what's on offer, and help you decide which system is best for you. But before you rush out to the shops there are two things you need to consider carefully.

Firstly, how much you can afford to spend, whether it's in cash, hire purchase, or plastic money. Remember to leave yourself a bit of money/credit over for software, and if possible, for peripherals. It may only be a couple of months before you decide you can't cope any longer without a disk drive, or a monitor.

Secondly – and just as important – what do you want to use the computer for? Are you really going to learn to program? Do you sincerely want to put your home accounts on computer, or produce the company newsletter? Do you want a 'serious' micro, a games micro, or something that combines a bit of both? Think carefully about these points before you buy; there's nothing worse than being lumbered with a machine that doesn't really suit your purposes.

The ACE Buyers Guide can't make your mind up for you; but we can give you the facts that will allow you to make a sensible decision.

Where to buy

Basically, you have four choices:

- the high street chain store – Dixons, Currys, Boots, etc.
- the independent computer specialist shop
- a mail order company
- second hand.

In the high street stores you should get a fair price for your machine; you should also be able to take it away with you immediately. Furthermore, many stores offer attractive 'bundles', giving you lots of extra goodies with the basic machine. But the salesperson behind the counter won't necessarily be very knowledgeable about the systems you wish to choose between. Also, it is not always possible to have an in-depth demonstration of the various machines on display.

In an independent specialist shop, the salesperson could well know the machines better and be able to demonstrate them more fully but you might have to pay slightly more for the system.

If you buy on mail order, you can't, of course, have the machine immediately and you can't have a demo of it, but you might come across a cheaper price. If you order your micro through the post, make sure you know exactly what components you are getting before you send off your money, send a covering letter with any money and keep copies of those letters, and keep a note of the cheque/PO number. If possible, stick to a mail order company you know and trust.

Buying a micro second hand has advantages other than price. Frequently, the previous owner will be selling software and possibly some peripherals with the machine, so you can start up with a more complete system. Obviously, however, software and add-ons being sold with the machine will bump up the asking price, so check the price of the individual components first – they may not be the bargain they seem! Second hand micros can be found on offer in the specialist computer magazines, usually in a classified advertising section towards the back. It's a good idea to try to buy from someone who lives reasonably near you, so that you can see the machine before you part with your money and have a demonstration. Again, before you pay, check what you're getting for your money, and even if you're buying from your best friend, it would be no bad thing to put down in writing what you'll pay for what. Remember that you run the same risks buying second hand computers as second hand cars; you may end up with a duffer.

Setting up

Apart from the computer itself, there will be plenty of other items you need to buy in order to get your system up and running. These can all too easily be forgotten in the excitement of buying the computer, so go through this checklist now – you don't want to spend all Christmas waiting for the shops to open before you can load up your favourite game.

- **Plugs**: most micros don't come complete with them. Nor do disk drives, tape decks, monitors...
- **Fuses:** check that the plug has the right fuse in it (normally 3 amp) before you get it home.
- **Leads:** yes, the micro may well work with the television, but is the correct lead in the packaging or do you need to buy it separately?
- **Adaptor/trailing socket:** if the number of plugs needed comes to more than one, are you sure that your power points can cope? An adaptor will almost certainly be essential, and a trailing socket (box with three or four plug sockets on it) is a good idea, because there is a Murphy's Law of computing which states that a micro will always use more power sockets than you expect
- **Y splitter:** jolly handy if you're going to use the micro with the television. A Y splitter is a box which fits into the TV socket (on the TV itself) and will take both the TV input lead and the computer lead. You can then switch between one and the other fairly easily, rather than fumbling blindly behind the television for half an hour when you want to watch *EastEnders.*

Where to set up

Custom-made mahogany-look computer desks are for the unbearably affluent only. Basically, don't set the machine up so that the screen faces a window (you won't get to see much if you do). Remember that cables between keyboards/monitors/tape decks/disk drives are usually too short to be more than six inches away from each other, and that if the keyboard ends up sitting on the floor the cat will decide it's an ideal sleeping spot. Don't spill coffee (or indeed, anything stronger) over any of the units, particularly not the keyboard. Don't wave magnets near your disks or the drive, and if you smoke, don't drop ash over any of it.

Categories

We've tried to include details of all the salient features of the micros on the market, divided into particular categories.

- **Memory**: this refers to the total amount of Random Access Memory (RAM), not the amount left free to the user.
- **Packaging:** it's worth checking the details here against the price. A micro that appears expensive may come ready packaged with a monitor, tape deck or disk drive.
- **Disks:** does the machine use disks? If so, how much do they hold and how much do they cost? Is the disk drive built-in or external? Are add-on drives available? Is much software available on disk?
- **RRP:** all recommended retail prices we've quoted include VAT
- **Display:** many home/games micros are easily hooked up to a television, and this can be the most convenient and least expensive option. However, all computers (except the games consoles) can be connected to a dedicated monitor, which will give you a clearer picture, and save household arguments if you plan to use the family TV.
- **Graphics:** *Resolution* indicates the quality of screen display possible (the higher the figures the better);*Palette size* refers to the total number of colours available on the machine; *Colours* to the number that can be used on screen at any one time. *Sprites* and *Scrolling* refer to built-in hardware features (particularly useful for games) rather than effects that can be programmed in.
- **Sound:** tells you what kind of chip the computer uses to produce sound, what the speaker quality is like, and whether it can be used with the MIDI standard for linking computers and musical instruments
- **Hardware:** lets you know what the keyboard is like – can you use it for serious purposes?; tells you if it's possible to use a joystick or a mouse; and lists the ports in to which expansion devices can be plugged.
- **Software:** gives you the low-down on the amount and quality of software available for the machine at the moment in the various categories, and also makes a prediction about the level of future support.
- **Buying tips:** guidelines on what the bargains might be and where they might be picked up. Plus information on your rights under guarantee and what to do if the machine breaks down (God forbid!)

Hardware

Acorn Archimedes

Models: Archimedes 305, 310 and 310M

Package: Keyboard, mouse and drive; keyboard, mouse, drive plus monitor (colour or mono); 310M – M denotes inclusion of PC emulator

Memory:	
305	512K
310	1Mb

Processor: Acorn ARM

Recommended Retail

Price

305 no monitor	£801.60
305 mono monitor	£859.10
305 colour monitor	£1031.60
310 no monitor	£889.00
310 mono monitor	£946.50
310colour monitor	£1119.00
310M no monitor)	£958.00
310M mono)	£1015.50
310M colour	£1188.00

Disks

Format	3 1/2 inch
Price	Around £3.00
Capacity	800K formatted
Software	All on disk
Add-on drives	Yes
Built-in	Yes

- **Performance**

Good and fast

Graphics

Resolution	either 320x256 or 640x256 or 640x512 (multi-synch monitor)
Palette	4096
Colours	from mono up to 256 (320x256) or 16 (640x512)

Display	
TV	No
Monitor output	mono – composite video colour – RGB + sync
Monitor supplied	depends on package bought (see below)
Options	Acorn dedicated, 14 inch medium resolution, colour; 12 inch high res, mono

- **Performance**

Sprites	1
Scrolling	No
Speed	Fast

Sound

Sound chip	Custom chip
Speaker quality	Good
MIDI	Yes
Stereo output	Yes
Channels	16 (8 stereo pairs)

- **Performance** 6 octaves, one internal loudspeaker

Hardware

KEYBOARD: 103 keys, programmable auto-repeat rate. Keyboard has surprisingly cheap feel given quality of

In brief...

The Archimedes is at the cutting edge of micro technology. As such it is not cheap; nor does it have the software base of longer-standing machines. It's very exciting, but one to leave to the real enthusiasts for the time being.

BBC Master series

Models: Master 128, Master Compact

Package:
128 – keyboard plus monitor.
Compact – available in four packages:
(1) Complete system including keyboard (with integral disk drive), monitor and printer.
(2) Keyboard/drive only
(3) Keyboard/drive plus mono monitor.
(4) Keyboard/drive plus colour monitor.

Memory: 64K main RAM
64K sideways RAM

Processor: 65C12 (6502 compatible)

Recommended Retail Price

128	£457.35
Compact	
Entry system	£399.85
Mono system	£457.35
Colour system with printer	£629.85 £1084.45

Disks

Format	
128	5 1/4 inch
Compact	3 1/2 inch
Capacity	
128	320K formatted;
Compact	640K formatted
Software	most available on disk
Price of Blank Disks	£1.00 to £3.00 (less in bulk)
Add-on drives	yes
● **Performance**	good
Built-in	
128,	no;
Compact,	yes

Graphics

Resolution	640x256 mode 0; 320x256 modes 1 and 4 160x256 modes 2 and 5
Palette	16
Colours	modes 0, 3, 4 and 6 have 2 colours modes 1 and 5 4 colours modes 2 and 7 8 colours

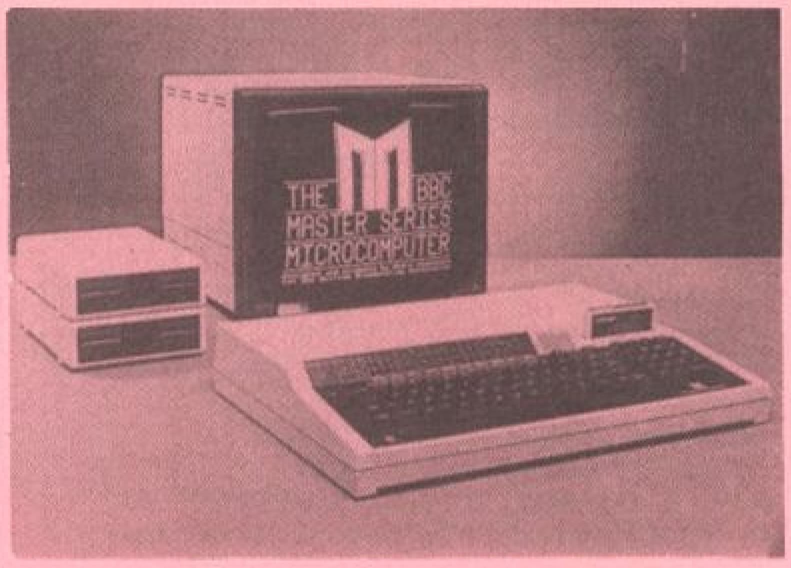
Mode 7 is a "teletext" text and block graphics mode. Modes 3 and 6 are text only.

● **Performance**	
Sprites	none
Scrolling	no
Display	
TV	yes
Monitor output	Composite video
Monitor supplied	
128,	no
Compact,	yes (see Package above)
Monitor options	Acorn dedicated models

Spaghetti factor	
128	average
Compact,	low

Sound

Speaker quality	good
Stereo output	no
MIDI	third party interfaces available
Channels	4
● **Performance**	good



Hardware

KEYBOARD: 64 keys plus 10 function keys and 19 key numeric keypad. Standard raised keys with audible tactile feedback.

JOYSTICK/MOUSE: Non-Atari standard analogue to digital ports can be used for joysticks. Takes most third party mice

In brief...

Master series intended as educational/scientific tools, with these two machines at the "homey" end of the range. Games/entertainment not recommended as main use, as leisure software is not always converted to BBC format.

PORTS:
128 – 2 enhanced Acorn cartridge slots ● disk interface ● Econet interface ● Centronics compatible parallel printer ● RS432 serial ● phono socket ● UHF channel ● Composite video ● RGB TTL ● 20 way IDC connector user port ● 40 IDC connector for second processor ● cassette interface ● 15 way D-type analogue to digital

Compact – disk interface ● Centronics compatible parallel printer ● 50 way edge connector expansion phono socket ● Composite video ● RGB TTL ● joystick/mouse

Software

EXISTING BASE: good, but only because of BBC compatibility

CURRENT RELEASES: steady flow, but not too numerous.

PROSPECTS: good for education and similar; poor for games

Main profile is in educational/scientific arena; games tend to be either BBC B games (and thus configured into 32K Ram) or bigger (not necessarily better) versions of BBC B titles.

GAMES: The Master arcade scene's poor, with much dating back to old Beeb days. The same goes for adventures, but memory limitations of BBC even more apparent here.

GRAPHICS: a few; one or two of them outstanding.

MUSIC: fair selection

Cassette loading supported only on 128

Buylines

MAINTENANCE: Within one year's guarantee, return faulty machines to dealer

BEST BUY PRICE:: As RRP

SECOND HAND AVAILABILITY: Limited. Try education magazines as well as computer press.

Both machines are upwardly BBC B compatible. Compact has built-in disk drive tucked under keyboard. Distinctive BBC brown and cream styling.

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machine

JOYSTICK/MOUSE: 3 button mouse supplied; joystick not supported

PORTS: RS 423 serial ● Centronics compatible parallel ● 9-pin mouse socket ● 3.5mm stereo jack ● 64 way Din ● 41612 expansion porv ● IEC 320 video outlet ● I/O interface (BBC compatible)

Software

EXISTING BASE: One game (Zarch), couple of databases (from Minerva Systems), art packages under development

CURRENT RELEASES: See above:

GAMES: One arcade tiitle (ACE Rated 979) and at least one more on the way. A couple of adventures in development.

GRAPHICS: Potential is enormous; currently a couple of packages in the pipeline

MUSIC: Again, enormous potential. Very little activity as yet, however.

SOFTWARE FORMAT: Disk only

PROSPECTS: Very good, but not necessarily for games market

Buylines

BEST BUY PRICE: As RRP

SECOND HAND AVAILABILITY: Not yet

MAINTENANCE: One year's guarantee. Faulty machines – return to dealer

Amstrad CPC

Models CPC 464, CPC 664, CPC 6128

Package Keyboard, monitor (mono or colour) plus built-in tape/disk, plus software (usually 12 games), joystick. CPC 664 is no longer manufactured but may be available on special offer from retailers in different packaging configurations.

Memory:	464/664	64K
	6128	128K

Processor	Zilog Z80

Recommended Retail Price

464 mono	£199.99
464 colour	£299.99
664 unavailable	
6128 mono	£299.99
6128 colour	£399.99

Disks

Format	3 inch, flippable
Capacity	180K formatted per side
Software	Yes, although disk versions may be harder to find in shops than tape.
Price	about £3.00
Add-on drives	Amstrad DDI-1 first drive for CPC464, Amstrad FD-1 or third party drives for any CPC.
Built-in	464 no 664/6128 yes.

● **Performance**
Reliable and quick

Graphics

Resolution	Mode 1	320x200:
	Mode 2	640x200
	Mode 0	160x200
Palette	27	
Colours	mode 1	4
	mode 2	2
	mode 0	16

Display

TV	Yes
Monitor supplied	Yes

Options Stick with Amstrad's own; need external power supply to use any independent models.

● **Performance**

Sprites	None
Scrolling	Vertical (rough) and Horizontal (very rough).
Speed	Average to slow

Sound

Sound chip	AY-3-8912
Speaker quality	Adequate
Stereo output	Yes, need cable
MIDI	No
Channels	3

● **Performance**
Has 8 octaves, but is basically as for the Spectrum +2 – but it does have stereo output, if a little rudimentary

In brief...

The Amstrad CPC family is a value-for-money and versatile breed. You get everything you need and the whole business needs just one plug. They'll do sterling service as games micros, but they are also able to turn their hands to more serious matters.

Hardware

KEYBOARD: 74 raised plastic keys with audible tactile feedback. Separate cursor cluster and redefinable numeric keypad. Very useable for word processing etc.

JOYSTICK/MOUSE: Standard 9-pin D-type. Third party mouse devices are available.

PORTS:CPC 464 ● PCB edge connector – takes disk drive and RS232C interface ● Centronics parallel ● 6-pin Din RGB with sync luminance ● sync3.5mm stereo socket ● joystick ● cassette port ● CPC 664/6128 ● PCB edge connector – takes RS232C interface ● Centronics parallel printer ● Add-on disk socket ● Joystick ● Cassette port ● RGB with sync luminance ● sync 3.5mm stereo socket ● expansion/I/O ●TV

Software

EXISTING BASE: Good, even if not as large as Spectrum or C64

CURRENT RELEASES: Reasonable; most major Spectrum and C64 titles are converted.

GAMES: Good, but some converted titles run slower than the Spectrum or C64 originals. Adventures OK, but Infocom considering withdrawing support for this format.

GRAPHICS: Good selection of titles.

MUSIC: Reasonable number of titles, but poor in comparison with C64.

SOFTWARE FORMAT: 464 tape, using built-in tape deck; 664/6128 disk, using built-in disk drive

SOFTWARE LOADING: Tape loading is reasonably quick and reliable; disk loading fast and reliable.

PROSPECTS: Uncertain. After initial interest, sales of CPC software have dwindled but there should still be areasonable amnount of games and utilities around.

Buylines

BEST BUY PRICE: Curry's is offering £20 off both and mono versions of the 464 in part exchange for an old computer. Dixon's has colour 6128s at £349.99. You could also try for a CPC 664 for around £60.00, but these are becoming increasingly rare. If the extra memory of the 6128 is not important, the CPC664 can represent a bargain if you can find one.

SECOND HAND AVAILABILITY: Very good. Often plenty on offer in classified ad sections of specialist magazines

MAINTENANCE: One year's guarantee. Faulty machines return to dealer. 664 statutory rights only.

Amstrad PCW

Disks

(8256, 8512 Drive A)

Format	disks
Format`	3 inch flippable
Capacity	180K formatted per side
	(8512 Drive B, 9512)
Format	3 inch double-sided
Capacity	720K formatted
Price of Blank Disks	about $3.00
Add-on drives	from third party companies only, mainly 5.25 inch format.

Add-on drives have been produced to take 5.25 inch disks, so that standard ASCII files in CP/M format can be transferred to the PCW machines.

● **Performance**
Reliable, reasonably fast and quiet.

In addition the machines reserve some of their memory for use as a RAM drive, with obvious benefits in speed.

Graphics

Display

TV	no
Monitor:	supplied monochrome only,giving 90 column text display.
Resolution	720x256
Palette	
8256, 8512	green and black;
9512	black and white
Colours	N/A
● **Performance`**	N/A

Models: PCW8256
PCW8512
PCW 9512

Package:
8256 – keyboard, monitor with built-in single disk drive, dot matrix printer, Locoscript 1 word processing software, CP/M operating system, DR Logo.
8512 – as 8256 above but with two built-in drives.
9512 – restyled keyboard, monitor with single built-in disk drive, daisy wheel printer, Locoscript 2 word processing software,

Memory:

8256	256K
8512	512K
9512	512K

Processor:	Zilog Z80

Recommended Retail Price:

PCW 8256	£343.85
PCW 8512	£458.85
PCW 9512	£573.85

Sound

Sound chip	none as such
Stereo output	no
Channels	N/A

● **Performance** beeps only. Some third party sound enhancement modules available.

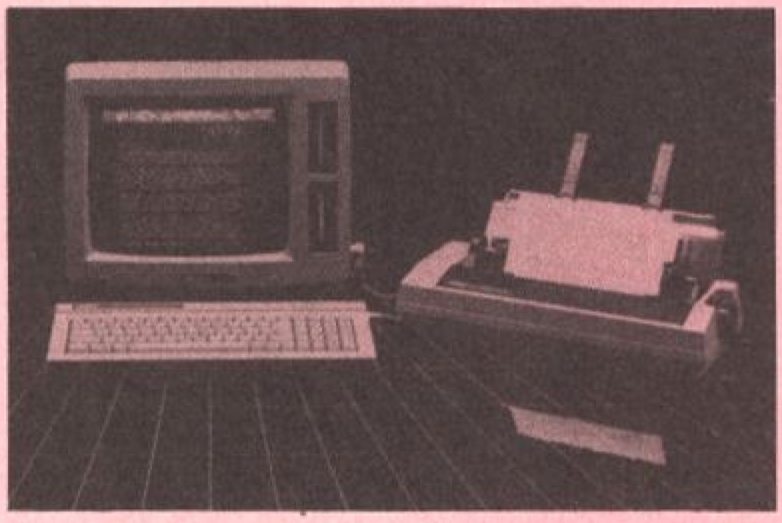
In brief...

The PCW range was designed as a word processing machine rather than a general purpose computer. Non-word processing software was produced after sales rocketed. Not recommended as a games machine

Hardware

KEYBOARD: Includes extra keys for word processing functions. Keyboard in 9512 a substantially improved version.
JOYSTICK/MOUSE Not supported. Joysticks and mice can be attached via a separately bought interface.

PORTS: One expansion port takes RS232C serial and Centronics Parallel interface ● Printer port for bundled printer
SPAGHETTI FACTOR: Low. Only one plug needed. Cable from keyboard to monitor; two cables from monitor to bundled printer.



Disk drives are set "vertically" in monitor casing to right of screen. Short monitor to printer cable means printer must be placed to left of monitor. Monitor to keyboard cable means keyboard sits naturally 6 inches to a foot in front of monitor.

Software

EXISTING BASE: not wide but generally programs of good quality. Appeals to specialist/niche type markets.

CURRENT RELEASES: very few.

PROSPECTS: would be poor but for launch of 9512. Revival will depend on new machine's popularity.

GAMES: Arcade titles are very scarce and, of course, monochrome only. Adventures are slightly more numerous, but again the range is small. A number of Infocom titles available under CP/M, but outlook for future releases uncertain.

GRAPHICS: very few but some low-end CAD-type software available.

MUSIC: none – machines not configured as such.
SOFTWARE FORMAT: Disk only. Good for small business applications.

Buylines

MAINTENANCE: One year's guarantee. Faulty machines return to dealer

BEST BUY PRICE: As above. Generally not sold below RRP.

SECOND HAND AVAILABILITY:
PROSPECTS: for 8256 and 8512, good. 9512 too new for second hand market as yet.

Apple Macintosh

Models: Macintosh SE
Macintosh II

Package: Monitor with built-in cpu and disk drive, separate keyboard

Memory: 1Mb

Processor:

SE	Motorola 68000
II	Motorola 68020

Recommended Retail Price

SE	£2,294.25 upwards
II	£4,329.75 upwards

Disks

Format	3.5inch
Price	Around £3.00
Capacity	800K
Software	All on disk
Add-on drives	Yes
Built-in	Yes

● **Performance**
Fast and reliable, but watch out for US software that hasn't been thoroughly tested

Graphics

Resolution

SE	512x342
II	1027x760

Palette

SE	black,and white
II	with colour monitor – 16 million

Colours with colour monitor – 16 to 256

Display

TV	no
Monitor output	integral monitor
Monitor supplied	Built in

Options

SE	use dedicated model only
II	Apple hi-res monochrome or AppleColor hi-res RGB

● **Performance**

Sprites	None
Scrolling	None
Speed	Reasonably fast

Sound

Sound chip	Apple (ASC)
Speaker quality	Good
Stereo output	
SE	No;
II	Yes

MIDI Third party interfaces available.
Channels 4

● **Performance** Good

Hardware

KEYBOARD: Supplied 81 keys including function keys and numeric keypad. Optional extra is the Apple Extended keyboard, with 105 keys

JOYSTICK/MOUSE: Joystick not supported. High quality one-button mouse supplied with machine

PORTS:

SE 2; Apple Desktop Bus connector ● 2 RS232/RS422 serial ● External disk drive ● 96-pin Euro-Din expansion slot SCSI – DB-25 connector ● External audio amplifier
II;2 RS232/RS422 serial DB-25 SCSI T

Software

EXISTING BASE: Wide range of software exists in virtually all fields except games.

CURRENT RELEASES: adequate; largely of US origin and in the business or DTP field

GAMES: very few arcade games, but adventures are more plentiful

GRAPHICS: lots of interesting software for those involved in DIY publishing

MUSIC: Very well supported for MIDI software – but it's expensive stuff

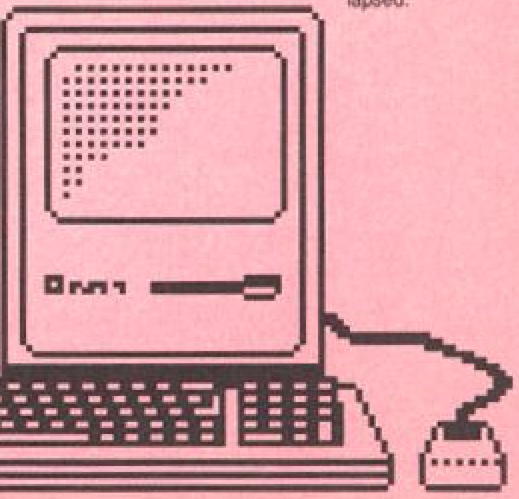
SOFTWARE FORMAT: All software supplied on disk

SOFTWARE LOADING: Quick and reliable

PROSPECTS: Excellent, especially in business and DTP

Buylines

BEST BUY PRICE There isn't much of a discounted market in Macs; you generally have to pay the list price



In brief...

A very expensive up-market machine for those keen on desk-top publishing, wimp systems, and up-market software. If you can afford it, great – but remember that software is very expensive. Games are lmostly imited to icon-driven adventures (little arcade action software available). Good for MIDI musicians, but be prepared to pay through the nose.

SECOND HAND AVAILABILITY: Reasonable, but not exactly cheap. Check small ads in specialist magazines.

MAINTENANCE: One year's guarantee. Apple offers Applecare – 'insurance' you take out to cover cost of repairs after guarantee has lapsed.

Atari ST

Models: Atari 520STFM, 1040STF, Mega STs

Package: 520STFM and 1040STF keyboard with built-in disk drive

Memory:

520STFM	512K
1040STF	1Mb
Mega ST	2 or 4Mb

Processor:
Motorola 68000

Recommended Retail Price

520STFM	£299.99
1040STF	£499.99

Disks

Format	3 1/2 inch
Capacity	360K formatted (1/2 Mb drive) 720K (1Mb drive)
Software	only supplied on disk
Price of Blank Disks	about £3.00
Add-on drives	yes
Built-in	yes

● **Performance** Fast and reliable

Graphics

Resolution	high res 640x400 medium res 640x200 low res 320x200
Palette	512
Colours	monochrome in high res, 4 colours in medium res, 16 in low res

Display

TV	
520STFM	yes.
Other models	via TV modulator
Monitor output	RGB/monochrome
Monitor supplied	no

Options:dedicated Atari monitors, in monochrome or colour, SM124 high res mono, SC1224, medium res, colour

● **Performance**

Sprites	none
Scrolling`	good vertical; poor horizontal

High resolution is only available on mono monitors; medium and low resolutions are only available on colour monitors or TVs.

Sound

Sound chip	AY-3-8912
Stereo output	no
MIDI	yes
Channels	three

● **Performance**
8 octaves, envelope shaping.

Hardware

KEYBOARD: 96 keys including 10 function keys. Full travel keyboard with audible click.

JOYSTICK/MOUSE: Joystick ports are standard. Two-button mouse supplied with machine

In brief...

Excellent as a general purpose home machine for games, small business, and productivity – it's also the number one choice for MIDI musicians. The ST's price could still give it the edge for artists over the Amiga.

PORTS MIDI out (5 pin DIN) ● MIDI in (5 pin DIN) ● Audio out ● Audio in ● RGB monitor ● mono monitor ● serial/modem port ● second disk ● hard disk ● mouse/joystick ● joystick ● cartridge ● TV

Software

EXISTING BASE: Though on the low side by 8-bit or PC standards, the number of ST titles makes it the best-supported of the new machines.

CURRENT RELEASES: Most major software houses convert their output to ST now, and several smaller houses specialise in ST titles.

PROSPECTS: Very bright indeed. Could soon rival Spectrum and C64 for number of new releases.

GAMES: Range of arcade titles isn't bad and adventures, though rarer, are generally of very high quality

GRAPHICS: Impressive, with several first-rate packages on the market.

MUSIC: excellent. Many companies producing sound editors, samplers, synths, etc

SOFTWARE FORMAT: Disk only.

SOFTWARE LOADING: A 360K disk can't hold a really large ST program, so two-disk titles are becoming increasingly common. The disk-changing these require can get tedious, especially where you've got to swap disks during play.

Buylines

MAINTENANCE: One year's guarantee. Return to dealer if faulty

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Atari XL/XE

In brief...

Once the choice of the dedicated arcade games player, these machines pioneered the use of sprites and quality sound. In their later configurations they remain attractive purchases for the wealth of existing software, but support is fading very rapidly and the outlook is grim.

Models: Atari 800XL (no longer manufactured), Atari 65XE, Atari 130XE

Package:

800XL retailers' own – look for keyboard, plus tape deck, joystick and software

65XE Atari Starter Pack includes keyboard, tape deck, joystick, software (10 games)

130XE Atari Starter Pack includes keyboard, tape deck, joystick, software (5 games)

Memory:

800XI	64K
65XE	64K
130 XE	128K

Processor:	6502

Recommended Retail Price

800XL	none
65XE	£129.99
130XE	£139.99

Disks

Format	5.25 inch
Price	Around £1.00
Capacity	360K formatted
Software	Most titles available on disk
Add-on drives	Yes
Built-in	No
● **Performance**	Good

Graphics

Resolution	320x192
Palette	256
Colours	128
Display	
TV	Yes
Monitor output	Composite video
Monitor supplied	No
Options	No Atari dedicated monitor manufactured. Use TV or monitor with composite video output
● **Performance**	
Sprites	8
Scrolling	No
Speed	Average

Sound

Sound chip	Atari custom chip
Speaker quality	Output thru TV
Stereo output	No
MIDI	Not supplied. Third party interfaces available.
Channels	4
● **Performance**	Good

Hardware

KEYBOARD: 62 keys including some special function keys for BASIC commands

JOYSTICK/MOUSE Standard joystick ports; mouse not standard

PORTS: Rom slot ● 2 joystick ● edge connector ● monitor

Software

EXISTING BASE: Good but long in the tooth.

CURRENT RELEASES: Thin on the ground; mostly budget.

GAMES: Arcade range is of high quality. Adventures poor to middling

GRAPHICS: Some good programs on the market.

SOFTWARE FORMAT: tape or disk. Disks are quick, but tape software can be a real bargain.

MUSIC: Well supported in this area.

PROSPECTS: Not brilliant now that attention is focused on Atari STs.

Buylines

BEST BUY PRICE:

800XL shop around – machines are now scarce

65XE Dixons is offering the Starter Pack at £99.99

130XE generally as RRP

SECOND HAND AVAILABILITY: Quite a few around; look in the mags

MAINTENANCE: One year's guarantee. Return to dealer if faulty

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Atari ST cont

BEST BUY PRICE: You won't get much under the RRP, but try for special bundles. WH Smith, for instance, is selling the machine together with £200 worth of software.

SECOND HAND AVAILABILITY: Yes, look in classified ads of magazines.

The ST is an attractive looking machine with slanted function keys above similarly styled slats. It was one of the first machines to include a disk drive in the side of the console – this design is now also taken up by other manufacturers.

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Commodore Amiga

Disks

Format	3 1/2 inch
Capacity	880K formatted
Price	Around £3.00
Software	All on disk
Extra drives	Yes
Built-in	Yes

● **Performance**
Noisy and surprisingly sluggish

Graphics

Resolution	640x200
Palette	4096
Colours	16 in high res 32 in low res 4096 in hold and modify

Display

TV	No but modulator available for A500 only at £24.99
Monitor output	SCART
Monitor supplied	No
Options	Commodore A1081 at £349.99

● **Performance**

Sprites	8
Scrolling	Vertical, horizontal
Speed	Very fast with right software

Graphics co-processor allows sprites to be 're-used' under some circumstances and offers powerful windowing capabilities, while block image transferrer (blitter) speeds up large-scale graphics work enormously.

Models:	Amiga 500 A1000 A2000

Package: keyboard, with built-in disk drive. A1000 is discontinued, so packaging will depend on different dealer policies.

Memory:

A500	512K
A1000	256K
A2000	1024K

Processor: Motorola 68000

Recommended Retail Price

A500	£499.99
A1000	none – discontinued
A2000	£1236.25

Sound

Sound chip	Commodore custom chip
Stereo output	Yes
MIDI	Not built-in. Third party interfaces available.
Channels	4

● **Performance**
Built-in text to speech synthesis, 9 octaves, programmable waveforms, amplitude and frequency modulation

Hardware

KEYBOARD: 94 key, 10 function keys, numeric keypad, separate cursor cluster

JOYSTICK/MOUSE Mouse supplied as standard

PORTS: Two joystick/mouse ● Audio output left and right ● Extra disk drive ● Serial (RS232, ● Centronics parallel ● RGB/video ● Monochrome video ● Expansion bus

Software

EXISTING BASE: Small in comparison to 8-bit machines

CURRENT RELEASES: Beginnning to pick up

GAMES: Arcade products not yet up to the capabilities of the machine. Few adventures are available, but they are generally of a good quality.

GRAPHICS: Quality and range outstanding.

MUSIC: Potentially superb. Little MIDI support as yet.

SOFTWARE FORMAT: Disk only

SOFTWARE LOADING: A noisy process

PROSPECTS: Good, but A500 needs to establish a larger user-base before becoming a prime development machine.

Buylines

BEST BUY: Not at present sold below RRP, although it can be worth checking various dealers for special packs.

SECOND HAND AVAILABILITY: Limited as yet.

MAINTENANCE: Within guarantee should be returned to the dealer.

In brief...

Stunning specification. Despite initial uncertainty, software support now seems assured. Although overshadowed by the ST in the UK to date, overseas sales (particularly in US) are high. An excellent machine for those who can afford one.

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Commodore 64/128

Models: C64, 128, 128D

Package: C64 and 128 keyboard plus C2N tape recorder, plus accesories (according to individual dealers). C128D keyboard plus disk drive.

Memory: C64, 64K; **C128, 128K; C128D**, 128K

Processor: C64, 6510; **128/128D**, 8502 plus Z80 for use in CP/M mode

Recommended Retail Price: C64; £159.99-£179.99† **C128** £199.99 stand-alone; £229.99 with C2N; £249.99 with C2N + software **C128D** £399.99

† according to individual dealers' packages.

Disks

Two disk drives are commonly available – the C1541 and the more recent C1571.

Format	5.25 inch
Price	£1.00 (less in bulk)
Capacity	
1541	140K formatted
1571	340K formatted
Software	Most titles available on disk
Add on drives	Yes, including third party units with improved performance
Built-in	128D only

● **Performance** Commodore 1541 drive is notoriously slow and noisy; 1571 marks substantial improvement.

Graphics

Resolution

C64	320x200

C128/128D: as 64 in 64 mode, plus 640x200 in 128 modes (80 column display)

Palette	16
Colours	8

Note Attribute system places minor limitations on number of colours displayable in any 8*8 pixel square.

Display TV	Yes
Monitor output	
64	Composite video
128/128D	RGB for 80 column display
Monitor supplied	No
Monitor options	
C1900M	£119.99 mono
C1901	£249.99 colour
C1084	£349.99 colour

or suitable RGB/composite monitor

● **Performance**

Sprites	8
Scrolling	vertical, horizontal
Speed	Good for scrolling and sprites, poor otherwise.

Hardware sprites and scrolling have proved both a blessing and a curse for Commodore graphics. They make certain tasks (particularly the programming of sprite-based shoot-em-ups) much simpler but more recent 3D software tends to run slowly (if at all).

In brief...

The 64 is an excellent games machine. The 128 and 128D can be configured for business use using the CP/M standard and giving access to a vast range of business and utility software. 64 is a particularly difficult machine to learn programming on due to outdated BASIC.

Sound

Sound chip	8581 sound interface chip
Speaker quality	Output thru monitor
Stereo output	No
Channels	3
MIDI	No, but many third party interfaces available

● **Performance**
Very sophisticated for the price. The Commodore 64 used to be most popular budget music computer for both MIDI and programming its on-board chip.

Hardware

KEYBOARD: Raised plastic keys with audible tactile feedback, plus function keys. Cursor key arrangement very awkward.

JOYSTICK/MOUSE: Provision for two standard joysticks. Mouse not supplied. Commodore 1350 mouse available, plus third party manufactured models.

PORTS: 2 joystick ● expansion ● cassette ● non-standard serial ● composite video (C64) RGB (128+128D) ● TV ● User port

Software

EXISTING BASE: Excellent. Only rivalled by the Spectrum, but in many cases, Commodore versions of programs are superior.

CURRENT RELEASES: Still pouring out.

GAMES: Arcade action second to none. Adventures - good selection.

GRAPHICS: Good selection – quality of

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graphics means that programs can be reasonably sophisticated.

MUSIC: Good wide range of sound editors, some samplers. Many MIDI utilities available.

SOFTWARE FORMAT: C64/128 – tape or disc from external dedicated tape deck (C2N) or disc drive. C128D – tape from C2N or disk from integral disk drive.

All Commodore machines require the Commodore C2N Tape Deck for loading tape-based software. Some third party interfaces are available to enable a normal domestic recorder to be used with the machines but this arrangement may not be as reliable.

SOFTWARE LOADING: Slow as always on cassette and disk loading not as fast as it should be due to slowness of dedicated drive. Most software produced with fast loader routines.

PROSPECTS: Supply will eventually slow, but Commodore games may well last longer than Spectrum, due to direct portability of games from US.

Buylines

BEST BUY PRICE: Old style C64s, dating back to before the redesign can be picked up for around £130-£150. Otherwise, with Commodore's policy of letting the dealers devise their own "bundles", it's a case of picking the one you like best.

SECOND HAND AVAILABILITY: Good for all models. Check small ads in various magazines.

MAINTENANCE: Under guarantee – take machine back to dealer. Should get straight replacement within 30 days of purchase (at dealers' discretion). Ex-guarantee – use independent repair company.

IBM & compatibles

Disks

Format	Mostly 5.25 inch some very new models use 3 .5 inch
Price:	Well under £1.00 for 5.25 around £3.00 for 3.5
Capacity:	Almost always 360K formatted
Software:	All on disk
Add-on drives	Yes
Built-in	Yes

Performance
Reliable and pretty fast; hard disks, of course, are even faster

Graphics

Graphics are not provided as standard on PC machines, although nowadays most all machine are sold with the necessary add-on boards already installed. There are three common standards, CGA, EGA, and Hercules:

CGA (Colour Graphics Adaptor)

Resolution	320x200 low res 640x200 medium res
Palette	none as suchbut three different colour schemes available in low res
Colours	4 in low res, mono in high res

CGA is the most common PC display standard for colour systems.

EGA (Enhanced Graphics Adaptor)
Both CGA graphics modes, plus high resolution as follows

Resolution	640x350
Palette	64
Colours	16

Normally fitted as upgrade to basic machine, but comes as standard on some PCs (eg Amstrad PC1640).

Hercules

Resolution	720x348
Colours	Mono only

Often built-in on mono PCs.

These are the three most common display standards, accounting between them for almost all cheap PCs currently in production, but other adaptors do exist. Buying second hand you may well encounter machines with unusual or text-only displays.

Display

TV	no
Monitor output	Normally RGB
Monitor supplied	With most packages
Options	Dedicated monitors are usually supplied or available for machine. Generally, any RGB should do.

Sound

Sound chip	None as such – need direct speaker modulation
Speaker quality	Generally poor
Stereo output	No
MIDI	Third party interfaces available.

Performance
Not really a machine for the musician in view of the more recent competition from

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Atari and (at the uppper end of the market) Apple Macintosh.

Hardware

KEYBOARD: All models use raised plastic keys with audible tactile feedback and include function keys and separate numeric keypads. A wide variety of third-party keyboards is available.

JOYSTICK/MOUSE: Two different joystick standards exist, IBM (analogue) and Amstrad (Atari style - the norm for games playing). Most games support either IBM or both, but Amstrads can now be adapted to use IBM joystick. Newer models (eg, Amstrad) include mouse in package. Third party mice are available for mouseless PCs.

PORTS: Varies. Expect Centronics parallel, RS232, expansion port with most machines – but some of thes are optional.

Software

EXISTING BASE: Vast

CURRENT RELEASES: Still pouring out, with price levels dropping as well.

GAMES: Cheaper machines has meant that more and more games are being released on the PC – both arcade and adventure. CGA graphics standard use to be predominant, but an increasing number of EGA games with superior graphics are appearing. PC only recently perceived as a machine with games potential.

GRAPHICS: Many sophisticated packages for business presentation graphics; not too much for the artist.

MUSIC: Fair selection of MIDI packages and interfaces, those these tend to be expensive.

PROSPECTS: Won't dwindle as long as there are PCs on desks

Buylines

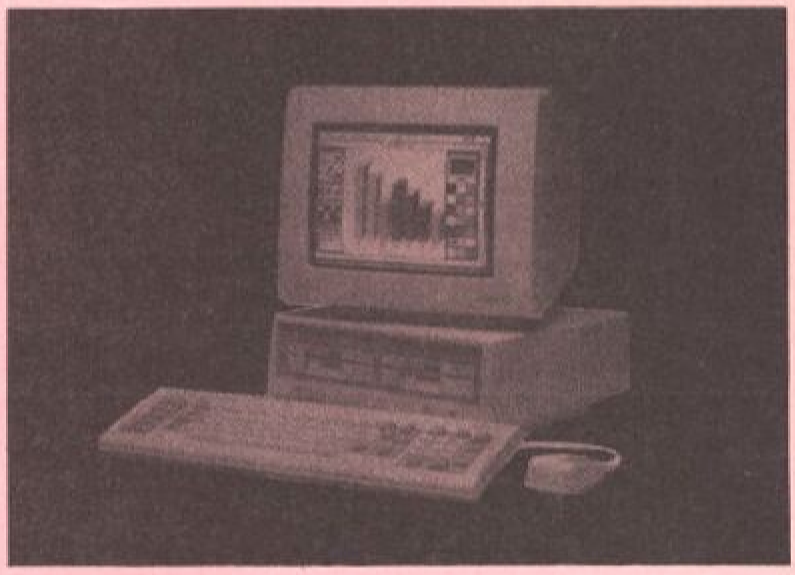
BEST BUY PRICE: All-in-one packages – such as the Amstrad – represent good value, but if you know what you're doing even better bargains can be had from discount stores. If you don't know what you're doing go for a reputable brand.

SECOND HAND AVAILABILITY: PCs can often be picked up in auctions of computer and office goods, or through magazine adverts.

MAINTENANCE: Return to dealer if faulty, but a maintenance contract – often surprisingly cheap – can guarantee your piece of mind

In brief...

Superb value if you want an all-round machine, but the PC still betrays its business origins. Increasing number of games software releases, but few of these are of the coin-op arcade variety. Definitely not to be considered if entertainment is your first priority.



Model: IBM's PC is the original. The many clones include Amstrad's PC 1512 and 1640 series, Tandy's 1000EX, Spectrum Bondwell 32, etc. The specifications given below will generally apply to most IBM compatibles unless particular riders are made. If you are thinking of buying a PC or compatible check all the salient details with dealers first.

Package: Depends on manufacturer. Amstrad supply a machine with monitor, with or without hard disk. You can buy the bare bones or the whole works.

Memory: usually 512K-640K

Processor: Intel 8086, 8088 or variants

Recommended Retail Price
From around £400.00 for the cheaper basic clones to £1500 for top-of-the-range clones (with hard disk, colour monitor etc.) IBM machines themselves are considerably more expensive.

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MSX

Disks

Format: mostly 3.5 inch, a few 5.25 inch drives produced
Capacity 360K formatted (3.5")
Software mostly available on disk
Price of Blank Disks about £3.00,
Add-on drives yes
Built-in no

Performance reasonable. MSX disk-drive units tend however to be very expensive.

Graphics

Resolution		256x192
Palette	MSX 1	16
	MSX 2	256
Colours	MSX 1	16
	MSX 2	256

Display
TV yes
Monitor output composite video
Monitor options Some manufacturers produced dedicated models.
Monitor supplied no

Performance
Sprites yes
Scrolling no

Sound

Sound chip AY-3-8910
Speaker quality output through TV
Stereo output can be connected to external hi-fi system
MIDI third party interfaces available
Channels 3

Performance good Yamaha's CX5M was designed with musical applications foremost in mind.

In brief...

Main strength of MSX is in its implementation of arcade games.There is a very active user group that partially compensates for lack of industry support. Despite the attractive discounting of some models, the purchase of an MSX machine involves a high degree of risk with regard to future support and software releases.

Hardware

KEYBOARD: Generally standard raised plastic keys

JOYSTICK/MOUSE: Standard joystick port. Third party mice available.

PORTS: Expansion bus ● cartridge slot ● monitor output ● RF TV ● audio ● tape deck ● Centronics printer ● Disk drive

Software

EXISTING BASE: reasonable, twith a number of Japanese cartridges available. Stockists now very hard to find.

CURRENT RELEASES: very few. Mostly budget or imported.

PROSPECTS: poor. While there is no shortage of software worldwide, not all UK software houses include MSX in their plans.

GAMES: some good arcade titles well-implemented, but adventures are few and far between.

GRAPHICS: not much on the market

MUSIC: Yamaha's now discontinued CX5 was configured for musical applications; thus there are a number of packages available

SOFTWARE FORMAT: tape, disk or pre-programmed games cartridge with tape. predominant.

Buylines

MAINTENANCE: One year's guarantee. Return to dealer if faulty

BEST BUY PRICE: MSX 1 can be picked up for as little as £20.00 these days. MSX 2 is scarce, but should cost between £100-£200.

SECOND HAND AVAILABILITY: Check small ads in computer press

MSX is not a computer as such, but a standard design incorporated into a number of computers manufactured by a number of (mostly) Japanese companies.

Models:
MSX 1, launched 1985, no longer manufactured, some models still available at knock-down prices. **MSX 2** is current version but machines not widely available in UK.

Package: Generally keyboard only. Some MSX 1 models can be found with tape deck and software

Memory: MSX 1 – 32K-64K; MSX 2 – 128K

Processor: Zilog Z80

Recommended Retail Price None for MSX1, MSX2 – £150 plus.

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Note to dealers
If you would like to be included in this list, please telephone Louise Cockroft on 0225 446034.

Sinclair Spectrum

Models: Plus (48K and 128K); Plus 2, Plus 3

Package: Keyboard and built-in tape/disk, plus joystick, selection of software.

Memory:

Plus	48K or 128K
Plus 2	128K
Plus 3	128K

Processor:	Zilog Z80

Recommended Retail Price

Plus	none; shop around
Plus 2	£139.00
Plus 3	£199.00

▨ Disks

(Plus 3 only)

Format	3 inch 'flippable'
Price	Around £3.00
Capacity	180K formatted per side
Software	Little as yet
Extra drives	Not yet available
Built-in	Yes

● **Performance**

Generally fast and reliable. Some hitherto unforeseen compatibility problems may arise with commercial software – but they haven't surfaced yet.

▨ Graphics

Resolution	256x192
Palette	8
Colours	8

Only 2 colours can be used within any 8x8 pixel square. Limits graphics potential.

Display

TV	Yes
Monitor output	RGB
Monitor supplied	No
Options	No dedicated Amstrad/Sinclair monitor, but any RGB suitable.

In brief...

The Spectrum is primarily a games machine and should be bought only as such. It is unsuitable for business use, with low memory capacity and only a 32 column screen display. For productivity (ie, graphics and music type applications) use, it is not really sophisticated enough for serious projects. Utilities fair but serious users will want to upgrade before too long.

● **Performance**

Sprites	None
Scrolling	None
Speed	Average

Despite clever programming, the Spectrum's display still compares unfavourably with both the Amstrad and Commodore machines.

▨ Sound

Sound chip		AY-3-8912
Speaker quality	Plus	dreadful
	Plus 2 and 3	better
Channels		3
MIDI	Plus 48K	No
	Plus 2/3/128K	Yes

(non-standard socket built-in).

● **Performance**

Poor – sound has never been the Spectrum's strong point, and few Spectrum software titles make much effort in this area.

▨ Hardware

KEYBOARD: The Spectrum Plus keyboards are made of hard plastic set into the casing, with a squidgy feel. The Plus 2/3 keyboard has raised hard plastic keys. Unlike the older model, it can be used more easily for word processing.

JOYSTICK/MOUSE: Non-standard on all models. Suitable interrfaces widely available. Compatible joystick included in Plus 2 and 3 packaging. Third party mice available but mouse compatible software rare.

PORTS: 2 joystick ● RS232/Midi ● RGB monitor ● Audio ● Numeric keypad ● Expansion/I/O ● TV

▨ Software

EXISTING BASE: Second to none.

CURRENT RELEASES: Most major software firms are continuing to bring out the majority of their titles on the Spectrum.

GAMES: A huge number of arcade titles ranging from abysmal to execellent. Wide range of adventures, many Quilled.

GRAPHICS: Fair selection, some of which squeezes better graphics performance from the machine than one would expect from the specification.

MUSIC: A couple of MIDI interfaces available, plus Cheetah Specdrum drum

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SOFTWARE FORMAT: Plus – tape using external tape deck; Plus 2 – tape using built-in tape deck; Plus 3 – tape (using external recorder, not supplied) and disk using built-in disk drive.
N.B. Third party external disc drives are available for Plus and Plus 2 but no software standard has been established. Disk software for these models is therefore very scarce.

PROSPECTS: New releases will undoubtedly get fewer in number as the strength of the 16-bit machines (see below) grows. The user base will, however, last for a good couple of years yet.

Buylines

BEST BUY PRICE Plus can now be picked up cheaply as tno longer manufactured. Try to find a shop selling off old-stock at around £50. Curry's is offering Plus 2s at £139.99

SECOND HAND AVAILABILITY: Good. Check small ads in various magazines.
NB: The original Sinclair 48K model can still be found second-hand. If you're only interested in playing games and don't mind the rubbery keyboard, it could represent a good investment. Ensure that you get the 48K model – there is no outward way of distinguishing it from the (even earlier) 16K models, which are quite useless for running contemporary software.

MAINTENANCE: All Amstrad-badged Spectrums have a year's guarantee. If they go wrong within the guarantee period, take the machine back to the dealer which sold it to you. For pre-Amstrad Spectrums (Plus and Plus 128) bought as new and within guarantee period, contact Sinclair Research.

Atari consoles

Models: Atari 2600
Atari XE Video Game Console
Atari XE Games System

Package
2600: console plus software
XE GS: console, software
XE GS: console, joystick, additional keyboard, light gun, software (3 games)

Recommended Retail Price

2600	£49.99
XE GC	£79.99
XE GS	£119.99

Disks

XE only: see Atari XL for details

Graphics

Resolution officially 320x192, 160x90 or 80x192 according to mode. Most software is produced on a res of 160x192

Palette	16
Display	
TV	yes
Monitor supplied	No
Options:	With Games System only

Hardware

KEYBOARD: Only as an extra on the XE Games System. Of pretty good quality

JOYSTICK/MOUSE: All machines take standard Atari joysticks.

In brief...

The Atari range of consoles represents good value in terms of price and volume of software available. But note that the 2600 is strictly a *games* console while the VGC and VGS can both be upgraded to be used as computers.

PORTS: 2600 game controller, TV, cartridge slot ● VGC as 2600, with socket for extra keyboard ● VGC as above

Software

EXISTING BASE: Vast. Systems are compatible with all old Atari console games

CURRENT RELEASES: Software is still in production, but not in the same volume as a couple of years ago.

GAMES: Excellent arcade games abound; many adventures.

GRAPHICS: very few

MUSIC: Hardly any

SOFTWARE FORMAT: VCS – cartridge only. VGC and VGS can use crtridge, tape, or disk (if connected)

PROSPECTS: Not much better than reasonable. Much depends on sales this Christmas.

Buylines

BEST BUY PRICE:2600 check out Dixon's for special offers. Console and System check for variations in packages listed above; otherwise, as RRP.

SECOND HAND AVAILABLITY: Good; look in computer magazines

MAINTENANCE: Manufacturers' guarantee. Any problems – return to dealer.

Nintendo

Disks

A disk system is available in Japan, using proprietary non-standard Nintendo disks. The format provides greater memory capacity and hence enhanced versions of some software (e.g. Super Mario Bros II). The system is not available in the UK at present.

Graphics

Display	
TV	yes
Monitor options	not yet supported
Resolution	256x240
Palette	52

Sound

Channels	3

● **Performance** includes speech synthesis

Hardware

Ports: ● RF TV, video ● audio I game controller slots ● cartridge slot

MAINTENANCE: Manufacturer's guarantee.

Additions of light gun and robot make this a suitable machine for younger children.Not a true computer; recommended as games console only.

In brief...

Japanese software base not as good as Nintendo's, but what counts is how many titles reach UK. Mastertronic have given strong support to machine, so prospects are reasonable.

Software

EXISTING BASE: Huge (in Japan)

CURRENT RELEASES: Some

PROSPECTS: Good, but rate of import will depend on machine's popularity in UK. Because of the Yen to Pound conversion rate, Japanese software is likely to remain expensive.

GAMES: good range of arcade-type software. Some arcade adventures.

GRAPHICS: not as yet

MUSIC:' none

SOFTWARE FORMAT:

cassette	no
cartridge	yes
smart card	no
disk	not yet available in UK

Buylines

BEST BUY PRICE: As RRP

SECOND HAND: Not as yet.

MAINTENANCE: Manufacturers guarantee

Nintendo Entertainment System

Package:
Standard version console, plus game controllers, plus 1 game (Super Mario Brothers)
Deluxe version – console, game controller, light gun, ROB robot, two games

Recommended Retail Price

Standard model	£99
Deluxe model	£159

Sega Master System

Package: console, plus light gun, game controller and 1 game (Hang On)

Software format

cassette	no
cartridge	yes
smart card	yes

Recommended Retail Price	£99

Disks

Not available.

Graphics

Resolution	256x192
Palette	64
Display	
TV	yes
Monitor options	no

Sound

Channels	3

● **Performance** Good sound effects on most games.

Hardware

PORTS: 2 game controllers ● cartridge slot
Robust casing. Not designed for future expansion. Not a true computer; recommended as games console only.

Software

EXISTING BASE: large

CURRENT RELEASES: well-supported by UK distributor Mastertronic

PROSPECTS: good if support by 'Tronic and parent company Sega continues

GAMES: wide selection of arcade titles, generally considered to be of high quality. No adventures. Bulk of releases currently confined to conversions of Sega coin-op games.

GRAPHICS: none

MUSIC: none

Buylines

BEST BUY PRICE: As RRP

MAINTENANCE:
One year's guarantee. Back to dealer if faulty.

In brief...

A reasonable buy if a console is what you want. Interesting, too, because we may see more add-ons from Japan that give it extra power. However, at the moment, nearly all software is Japanes in origin and this is not to everyone's taste. It remains to be seen if it will receive any third-party support.

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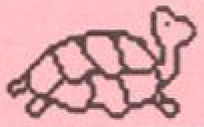

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MEGA-ST 4 Meg Ram/Mouse/Mono Monitor	1299.95	1129.95
MEGA-ST 2 Meg Ram/Mouse/Colour Monitor	1299.95	1089.95
MEGA-ST 4 Meg Ram/Mouse/Colour Monitor	1599.95	1349.95

Printers		
Atari SMM804 ST Printer + ST Lead	199.95	149.99
Panasonic KXP-1081 Printer, Epson comp. NLQ. 120CPS+ST lead	279.95	174.99
MP165 Printer, Epson compatible. NLQ. 165CPS+ST lead	263.35	199.99
MP135 Printer, Epson compatible. NLQ. 135CPS+ST lead	194.95	159.99
MP200 80 Col Printer, 200CPS. Epson compatible. NLQ 40CPS	343.85	294.99
MP201 136 Col Printer, 200CPS. Epson compatible. NLQ 40CPS	401.35	329.95
MP480 80 Col Printer, Epson compatible. NLQ. 480CPS+ST lead	424.35	339.95
MP26 132 Column Daisywheel Printer, 26CPS. Qume/Diablo Std	299.95	249.95
MP40 158 Column Daisywheel Printer, 40CPS. Qume/Diablo Std	435.85	349.95
Atari Lazer Printer (NEW)	1299.99	1159.95

Disc Drives	RRP	Our Price
Atari One Meg Drive 3.5"	199.95	169.99
Cumana One Meg Drive 3.5"	149.95	124.95
Cumana 5.25" ST Drive. (CSA1000S)	194.35	159.95
Micro Peripherals One Meg Drive 3.5"	149.95	119.95
Atari 20 Meg Hard Disc Drive (New Model SH205)	599.95	539.95
Supra 20Mb Hard Disc + Utilities	599.95	559.95

Monitors		
Atari Medium Res Colour Monitor	399.95	299.95
Philips CM8833 Colour Monitor + ST lead	329.95	279.95
Philips CM8533 Colour Monitor + ST lead	319.95	269.95
Philips CM8852 Colour Monitor + ST lead	349.95	299.95
Atari High Res Mono Monitor	149.95	119.95

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Microdeal Battery Backed Clock 520/1040 (New Upgraded Model)	34.95	27.99
Colour/Monochrome Switch (Allows 2 Monitors Connected)	29.99	25.99
SSDD 3.5" Discs (10) + Library Case (10) – LOW LOW PRICE –	17.95	11.95
DSDD 3.5" Discs (10) + Library Case (10) – LOW LOW PRICE –	22.95	14.95
Top Quality Branded 3.5" DSDD Discs (10) – LOW LOW PRICE –	27.95	18.95

Atari ST Software Arcade Adventure Strategy	Retail Price	Our Price
10th Frame	24.95	16.95
221B Baker Street	24.95	16.95
Airball	24.95	16.95
Altair	19.95	13.95
Alternate Reality	24.99	16.95
American Football (GFL)	24.95	16.95
Arctic Fox	19.95	13.95
Arena/Brataccus	34.95	23.95
Arkanoid	14.95	10.49
Auto Duel	24.95	16.95
Backlash	19.95	13.95
Barbarian	24.95	16.95
Bards Tale	24.95	16.95
Basketball (2 on 2)	24.99	16.95
Battlezone	14.95	10.49
Boulderdash Construction Set	24.95	16.95
Brave Starr (Dec 87)	Phone	Phone
Bridge Player 2000	19.95	13.95
Bureaucracy	34.99	23.95
Captain America (Nov 87)	Phone	Phone
Championship Baseball	24.99	16.95
Charlie Chaplin (Nov 87)	Phone	Phone
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Colonial Conquest	29.99	20.95
Crafton & Xunk	19.95	13.95
Crystal Castles	14.95	10.49
Damocles (Mercenery II)	Phone	Phone
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Deep Space	34.95	23.95
Defender of the Crown (Soon)	29.95	20.95
Deja Vu (Soon)	29.95	20.95
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F-15 Strike Eagle	24.95	16.95
Fahrenheit 451	19.95	13.95
Flight Sim Scenery Disc 11	24.95	16.95
Flight Sim Scenery Disc 7	24.95	16.95
Flight Simulator II	49.95	35.95
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Gauntlet	24.99	16.95
Gauntlet II (Soon)	24.99	16.95
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Goldrunner	24.95	16.95
Guild of Thieves	24.95	16.95
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Hard Ball	24.95	16.95
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Hollywood Hijinx	29.99	20.95
Hollywood Strip Poker	19.95	13.95
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Jupiter Probe	14.95	10.49
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Atari ST Software Arcade Adventure Strategy	Retail Price	Our Price
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Leather Goddess of Phobos	29.95	20.95
Liberator	12.95	8.99
Lurking Horror	29.99	20.06
Macadam Bumper	19.95	13.95
Marble Madness	19.95	13.95
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Mercenary Compendium	24.95	16.95
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Turbo GT	15.95	10.95
Winter Games	24.95	16.95
Winter Warz (Nov 87)	Phone	Phone
Wizards Crown (Soon)	24.99	16.95
World Games	24.95	16.95
Xevious	24.99	16.95

Atari ST Software Business Languages Utilities	Retail Price	Our Price
Advanced Art Studio	24.95	16.95
Aegis Animator	79.95	62.95
Art Director	49.95	34.95
Back Pack	49.00	35.95
Bulletin Board System V2	49.95	34.95
CAD-3D Ver. 2.0 + Cybermate	89.95	62.95
Degas Elite	24.95	17.95
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First Word Plus	79.95	56.95
Flash (Comms Program)	39.95	27.95
Fleet Street Publisher	115.00	89.95
GFA Basic Interpreter	45.95	32.95
GFA Compiler (Needs Interp.)	45.95	32.95
GFA Draft	99.95	69.95
GFA Vector	34.95	23.95
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Lattice C Ver 3.04 (MCC)	99.95	69.95
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All Others	PHONE

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PERIPHERALS BUYERS GUIDE

Whichever computer you own, there will come a time when your mind turns to expanding your system. Whether you decide you need to improve on the current set-up, perhaps with a faster data storage medium, or better screen display, or whether you want to add extra features such as a modem or a printer, the list of available peripherals is bewildering.

This ACE buyers guide concentrates on a selection of add-ons: the most popular, the best value for money, the most useful. Check it out before you part with your cash, and you shouldn't be disappointed.

The prices we've quoted here are recommended retail prices including VAT. It's worth noting that many dealers sell add-ons at special offer prices – printers, particularly. Before going out to buy your peripherals, check advertisements in computer magazines or local newspapers for a possible best buy price.

Printers

The number of printers on the market is bewildering, and prices range from £115 for the very basic Samleco DT-80 up to inkjet and laser printers costing £1000s for heavyweight business use.

The home user really has two choices – between dot matrix printers and those with daisywheels. A dot matrix model prints, self-evidentally as a series of dots to make up each letter. Most cheap dot matrix printers use a matrix of 9x9 or 11x9 pins to produce the dots – known as 9-pin.

The print quality is acceptable but on some of the very cheap models you may not get true descenders: the tails of the letters g, y, and j, for example may not properly extend below the line of print. Printers using a matrix comprising more pins – usually 24 – give a much better print quality, but inevitably cost more – starting at around £250-£300.

Daisywheels have each available character etched on to a print head – the daisywheel itself rotates to print each character. Print quality is good but daisywheels are notoriously noisy and slow. Until recently they have also been expensive.

One other printing technique is thermal transfer. Here the printing ribbon is waxed, and the pins heated, so that the melted wax is imprinted on to special thermal paper. Print quality tends to be poor, and you would be much better off looking at dot matrix or daisywheel models.

Printers also vary in the style, or font, used in the finished hard copy. Nine pin dot matrix printers will print in a simple style which uses as few dots as possible to make up the letter, known as Pica. Extra features, such as italic, emphasised, or condensed type will often be available, depending on the sophistication of the model. In near letter quality mode, most machines will print in a style called Elite. Again, other typestyles may be offered.

Panasonic KXP-1081

Connector Centronics

Print head 9-pin dot matrix
Characters per second
draft 100 cps max
near letter quality 25cps max

Print styles Pica, Elite

Price £245

Comment Generally considered an excellent value for money and versatile printer.

Commodore MPS 1200

Connector
Designed to fit Commodore 64's non-standard socket

Print head 9-pin dot matrix

Characters per second
draft 12 cps max
near letter quality 24 cps max

Print styles Pica, Elite, co,pressed, emphasised, double strike, expanded, double strike, italic, underlined, reversed, super- and subscripts

Price £250

Comment Considerable iimprovement over the older MPS801, which did not have true descenders; represents a better buy than the similarly priced MPS1000

Star NL10

Connector Centronics, RS232, Commodore

Print head 9-pin dot matrix

Characters per second
draft 120 cps max
near letter quality 30 cps max

Print styles
Pica, Elite, italic (only available using parallel or serial cartridge), condensed, proportional spacing

Price £278
Comment Interface for C64

Centronics GLP

Connector Centronics and RS 232

Print head 9-pin dot matrix

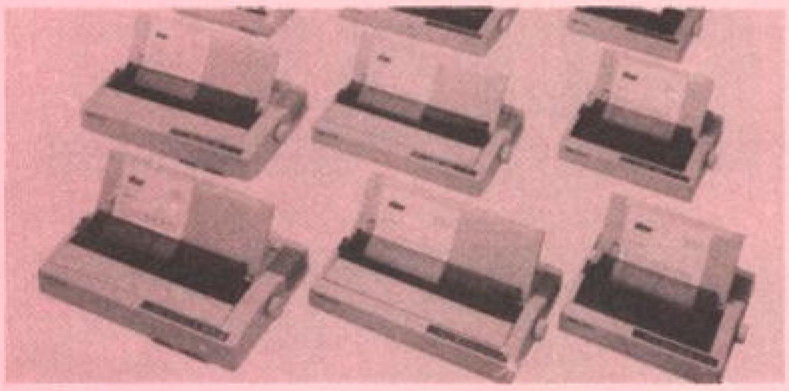
Characters per second
draft 50 cps max
near letter quality 25 cps max

Print styles Pica, Elite

Price £200
Comment slim compact printer giving good value for money.

Citizen 120D

Connector Centronics, RS232 and Commodore; choose which one when buying.



Print head 9-pin dot matrix

Characters per second
draft 120 cps max
near letter quality 25 cps max

Print styles
10 pitch Pica, 12 pitch Elite, expanded, compressed, emphasised, double strike

Price £207

Comment slim compact printer giving good value for money.

Amstrad DMP2000

Connector Centronics

Print head 9-pin dot matrix

Characters per second
draft 105 cps max
near letter quality 20 cps

Print styles
Pica, Elite, condensed, double width

Price £159
Comment sold and promoted by Amstrad for its CPC range; actually compatible with any computer with standard Centronics interface.

Joysticks

With most of today's micros, joysticks can be plugged straight into the Atari-standard joystick port on the machine: notable exceptions being the BBC range and both Sinclair and Amstrad Spectrums. For the latter, you can either use the joysticks supplied with the machine, or connect your own favourite via an interface. It's virtually impossible to recommend a particular type or brand of joystick; so much depends on your own personal preferences. Almost certainly though you will be looking for something sturdy and durable, with easily accessed fire buttons, and a positive feel to the directional movements. If you're left-handed, check before you buy that the fire buttons aren't designed for right handers.

Suncom TAC 5

Connector Atari standard

Fire buttons 3, 2 on base, one on top of shaft
Autofire no

Appearance/sturdiness lightweight, very positive feel, non-slip rubber pads on base.
Mechanism microswitches

Price £13.99

Competition Pro 5000

Connector Atari standard

Fire buttons 2 on base only

Autofire no

Appearance two versions, one with clear plastic base so that you can see all the innards and workings.

Mechanism microswitches

Price £16.49

Quickshot II Turbo

Connector Atari standard

Fire buttons 2, both on shaft

Autofire yes

Appearance traditional; design with grip-moulded shaft. Rubber suckers on base.

Mechanism microswitches

Price £14.95

Konix Speed King

Connector Atari standard

Fire buttons onemore of a fire strip really. Situated to either right or left hand side of base, depending on whether you buy a right or left handed version.

Autofire no

Appearance unusual in design: base is designed to be hand-held only.

Mechanism microswitches

Price 12.99

Cheetah 125 Plus

Connector Atari standard

Fire buttons 4two on base, two on shaft

Autofire yes

Appearance traditional stick with grip moulded shaft

Mechanism leaf switches on directional movement; blister swicthes on firing

Price £8.95

MIDI interfaces

The computer cab be used to control and redefine your musical compositions with the aid of a MIDI (Musical Instrument Digital Interface) connector. One micro, the Atari ST, already has MIDI interfaces built-in; all others need a third party device. MIDI is a standard form of transmitting music data, serially between different instruments, one of which can be your computer.

Cheetah

Machine Spectrum

Sockets IN, OUT, THRU

Extras Software
Software Eight track recording (real time or step time) software included
Price £49.95

Comment Good value for money. Compatible with Cheetah Specdrum drum synth

XRI Micon

Machine Spectrum

Sockets IN, OUT, THRU

Extras sync IN and OUT: operates on 24 pulses per quarter note

Software not provided, but good range available separately

Price £49.95

Comment slightly better specification than Cheetah above.

Datel

Machine Commodore 64

Sockets IN, OUT, and THRU

Extras Roland sync

Software Not provided but wide variety of existing software is compatible, including Rainbird's Advanced Music System

Price £24.99

Comment Cheapest for Commodore and supports most software.

C-Lab

Machine Commodore 64

Sockets IN, OUT and THRU

Extras Software

Software Supertracks package built-in

Price £199 with built-in software; £99 as stand alone

Comment Arguably the best interface for Commodores; comes closest to providing professional sequencing facilities

ElectroMusic Research

Machine Spectrum, Amstrad CPCs, MSX, BBC

Sockets I N, OUT, THRU

Extras Software

Software Good range of software available, including sequencers and patch editors

Price £99 with software

Comment Not terrifically ambitious, but EMR is one of the few British companies supporting the 8-bit micros

Skyles Electric Works

Machine Commodore Amiga

Sockets IN, OUT two THRUs

Extras none

Software none built-in

Price £35-£50

Comment software is still scarce on the ground for the Amiga; check out also Datel's Amiga interface at around the same price

Modems

With a modem your computer can access the outside world, either sending or receiving data from another modem-equipped computer, or from any number of Bulletin Boards or public databases, such as Prestel with its home user section Micronet 800, or Compunet.

Along with the modem itself, you'll also need software to interpret the data transmitted or received. Some modems are now produced with appropriate software built-in, which is convenient, but makes their uses less flexible; for many you'll need to buy software separately.

Pace Nightingale

Machine any with RS232 interface

Baud rate V21 (300/300); V23 (1200/75- 75/1200)

Auto- features auto-dial, autoanswer optional extras at £49

Software not built-in

Price £98.90

Comment good inexpensive entry level modem for accessing Prestel, Telecom Gold, independent Bulletin Boards etc. Nightingale is packaged with Commstar viewdata and terminal software on disk or Rom as Commstar CPC for Amstrad computers (£158.85). Similar package for Amstrad PCWs at £158.41, and BBCs at £98.90.

Miracle WS4000

Machine any with RS232 interface

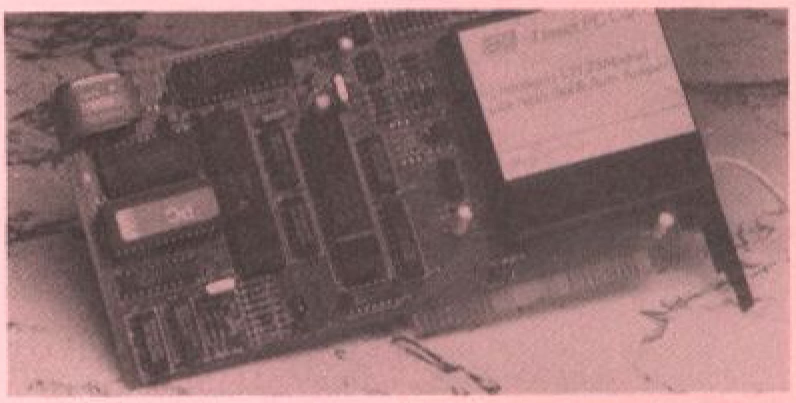
Baud Rate V21 (300/300)
V23 (1200/75; 75/1200)
1200/1200

Auto- features: autodial, autoanswer included

Software none built-in

Price £172.50

Comment Hayes compatible, includes speed buffering



Pace Linnet

Machine any with RS232 interface

Baud rate V21 (300/300)
V23 (1200/75)
1200/1200 terminal to modem

Auto- features
auto-dial, auto-answer built-in

Software
none built-in; uses AT commands

Price £163.30

Comment Hayes compatible; includes 2K memory for number/description storage with battery back-up.

Miracle WS2000

Machine any with RS232 or RS432 interface

Baud Rate 300/300
1200/75;
75/1200

Auto- features none

Software none built-in

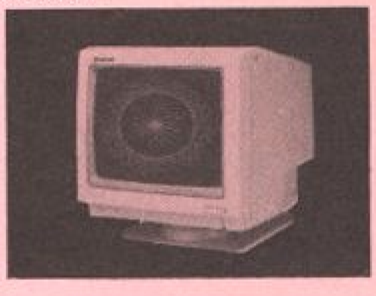
Price £124.20

Comment very well-built modem for the price

Monitors

Using the television with your computer is convenient, but a monitor will give you a much sharper, more detailed display. However, monitors start at around £200, and it may be hard to justify that sort of outlay. One solution is the TV cum monitor, a television with RGB socket, which will directly connect to an Amstrad CPC, Spectrum or Atari ST. The 14 inch screen Ferguson TX 14, and 16 inch screen Hitachi CPT 1646 are both widely available from TV shops.

Most Sony Trinitrons include a euro-connector which will give you an RGB display with the right lead – make sure you get a full 21-pin lead. These TVs are all available for rental at most major rental companies, if you prefer to rent rather than buy a television.



Micronet modem offer

Micronet 800 is currently offering new annual subscribers a free modem: the VTX 5000 for Spectrum owners, the Modem 2000 for those with other machines. Both modems operate at 1200/75 baud (viewdata) and 1200/1200 half duplex for user to user communications.

On the software side, Micronet offers a variety of packages, some of which will cost the new subscriber extra.

Spectrum built-in software on Rom. No extra charge.

Commodore 64 Mustang cartridge £33; or Mustang on tape or disc at £8.

Amstrad CPC Software plus RS232 £59.95

BBC Software provided. No extra charge.

Atari ST Fastcomm at £50, or Flying Start at £10

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MP480 80 col. Printer. Epson Codes. NLQ 480CPS + lead	424.35	339.95
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Use one of the FREE POST order forms on page 106 (Pink Pages), quoting the relevant order code(s). Or just telephone us on 0458 74011 with your credit card details.

For nearly all micros, there is a manufacturer's own dedicated monitor (the Spectrum, MSX machines and games consoles, which are designed to be used with a TV, are notable exceptions). Overall, you are better off with these models, rather than looking for independent manufacturers' versions. However, you could try Microvitec, Philips or Thomson's range.

Microvitec 1431/MZ3

Machines Sinclair Spectrum

Screen width 14"

Connector RGB; TTL compatible

Colour/mono colour

Price £259

Microvitec Cub 1459/A/DW2

Machines Atari ST, Amiga

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Price £364.99

Comment Flicker-free high resolution graphics available; interface lead included for ST range.

Samsung MD-1252G

Machine IBM PC plus TTL monochrome card

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Price £89

Comment Particularly inexpensive mono monitor for PCs

Samsung CD-1464W

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Mice

AMS AMX MK III Mouse

Buttons 3

Software (prices include mouse)
Spectrum AMX Art (£69.99)
Commodore 64/128: Stop Press (DTP) (£69.99)
Amstrad CPCs: AMX Art (£69.99) Stop Press (£79.99) Extra! Extra! (without mouse) (£24.99) Max (desktop environment – without mouse) (£19.99)
PC and compatibles Finesse (DTP) (£159.99)
BBCs Stop Press (£79.99) Extra! Extra! (without mouse) (£24.99) Superart (£79.99) Max (without mouse) (£19.99)

Price generally sold only in conjunction with software (above). Old mouse can be part-exchanged for MK III mouse for £29.99.

Comment Of all mice, probably has the widest range of compatible software, covering art, DTP and Wimp front ends.

Kempston

Machines Spectrum, Amstrad CPCs, PCWs, IBM PC and compatibles

Buttons 2

Software Spectrum: Toolkit (£49.990; Graphics Kit (£59.95); Jeeves (desktop environment) for Plus 3 (£69.95)
CPCs: Art Studio (£69.95)
PCWs: Fleet Street Editor Plus (£99.95); The Desktop Publisher (£74.95); Jeeves (£79.95)

Price stand alone mouse, Amstrad CPC: £49.95 PCW: £69.95 IBM: £99.95

Comment excellent art package in Art Studio to accompany CPC mouse

Widgits

Graphic tablets

Device to add drawing graphics, charts, etc, on-screens. The tablet is a pad which takes the place of the keyboard, mouse, etc, for input. By drawing directly on to the tablet with a stylus, the image is reproduced on-screen. A graphics tablet can give very detailed screen images – depending on the tablet's resolution – because of the familarity of drawing on a horizontal surface. You can also place drawings on the tablet and trace over them with the stylus to produce screen copies. Eidersoft (0708 856468) is launching a new electrostatic graphics tablet at £299 for the ST and Amiga in Feb 88.

Memory expansion

Ram expansions for older 8-bit machines used to be a popular add-on, particularly for programmers. Now with the Spectrum, Commodore and Amstrad machines all being available in 128K configurations, the attention has turned to upgrading 16-bit machines to one megabyte capacities. Commodore (0628 770088) offers a 512K expansion for the Amiga, while Atari (0753 33344) offers a similar pack for the 520ST. AS & L and Ladbroke Computing (0772 21474) also offer Atari memory upgrades.

Digitisers

A video digitiser is a device which will enable you to transfer images seen through the video "camera" on to the computer screen. The image is scanned and each element is reproduced digitally on the micro. Depending on the package, the picture on-screen can then be manipulated, or colour added, to a greater or lesser degree. Haba Systems (01-844 1202) produces a digitiser for the Atari ST and Amiga 64 at £99.95 and £185 respectively.

Lightpens

Also used mainly for graphics applications, a lightpen is a slim stylus with which you draw directly on to the monitor screen to create images. Most lightpens come complete with compatible graphics software, so you can get started straightaway. Trojan's lightpen package has been around for some time now, and is available with Cadmaster graphics software for Spectrum, Commodore 64/128 (and C16/Plus 4) and Amstrad CPC and PCW machines. Prices range from £19.95 to £39.95, and Trojan can be contacted on 0792 205491. Electric Studio supplies a lightpen with tape and disk based software for the Amstrad CPC range (£19.95 and £29.95), as well as a pen plus Screen Master software for PC compatibles at £39.95.

Printer/Plotters

While a conventional printer will print out text in black and white, if you want colour in your hard copy, you'll need a colour printer or printer/plotter. For drawing colour graphics (though not screen dumps) you may need a plotter.

The Penman Plotter from Penman Products (0903 209081) is a small device which runs over the paper, placed on a horizontal surface, and draws using its three differently coloured pens. It can also be used as a "turtle" for plotting Logo-programmed turtle graphics. From about £200, and for a variety of 8-bit machines.

More conventional colour printers tend to be more expensive. Try contacting distributor Micro-Peripherals on 0256 470011 for details of the range it sells, including the Juki 5520 dot matrix impact printer at around £320, which will print text in colour as well as graphics.

Teletext adaptors

Self-explanatory, really. A teletext adaptor enables you to access teletext data – from BBC and ITV teletext pages – and download software in teletext format when available. Volex Electronics produces a range of adaptors for 8-bit machines from about £200 upwards.

Red Box

The potential of computers as the centre of a domestic control system – turning your lights on and off, providing a burglar alarm – has long been recognised, but only recently has General Information Systems attempted to realise it with its Red Box range of packages.

Five Red Boxes are available, ranging from Red One, which will switch on and off electrical appliances at pre-set times, through temperature sensors, humidity detectors, infra-red movement detectors, to Red Five, a 105 decibel siren alarm.

The range is available for Spectrum, Commodore, Amstrad CPC, IBM PC and BBC machines. The Starter pack costs £129 (IBM: £199.95), and Reds One to Five range from £34.95 to £99.95.

Robots

While you still can't get computer controlled robots to do all the household chores and load up your games for you, a number of buggies and simply controlled robots have been produced, mainly with an eye to the educational sector. Spectravideo's Robot Arm, sold by Logotron (0223 323656) at £102.35 can be controlled by BBC computers, and Maplin Electronics (0702 552911) sells a robot in kit form for £39.95 which can be programmed from an IBM PC or compatible.

Extra sound

In the audio department there is little doubt about which machine needs the most help – the Spectrum. The only way to get decent sound out of it is to plug something extra in. Possibilities include the Sound Synth from Ram (0252 850085), at £24.95, and the Specdrum from Cheetah (0222 555525) at £34.95. See also Midi interfaces, above.

The Amstrad CPC has stereo capabilities which aren't well demonstrated by its tinny built-in speaker, but can be much enhanced by several devices. There's the Maestro from Vanguard Leisure (0772 617665) at £39.95, the Sound Blaster from Siren Software (061-228 1831) at £29.99, or Ram's Speech Synth at £29.95. The Commodore 64, ST and Amiga all have perfectly good sound hardware and merely require software to nudge them along.

Disk Drives

Most micros which don't already feature built-in disk drives, or which normally load software in from cassette will offer a disk drive as an optional extra. Aside from the manufacturer's own models, a number of independent companies have also produced disk drives for a number of machines.

It's worth looking at alternative disk drives for the Commodore 64 range, if only because Commodore's own 1541 model is so slow as to make the trade-up to a disk drive hardly worth it. Evesham Micro's Excelerator Plus is particularly worth checking out.

Until recently the only disk drives available for the Spectrum were from third party companies, such as Opus. Opus's 3 1/2 inch Discovery drive was, before the launch of the Plus 3, the nearest thing Spectrum owners had to a standard drive.

You can also buy add-on 5 1/4 inch drives for the Amstrad CPC range, rather than Amstrad's own 3 inch variety. These have been produced to enable users to take better advantage of the 6128's CP/M capabilities; most CP/M software being on 5 1/4 inch disk.

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● Spectrum 48K+, Amstrad 464, colour monitor, drum machines, midi sampling hardware, hundreds of software titles and loads more!! Immaculate condition, amazing bargain! Just £450! Worth £1500+. Phone Peter (021) 523 3993 after 5.30pm

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● Amstrad PC1640 double drive ECD plus 32MB hard card only one month old. Includes software amazing value at £1150. Phone Paddy on (0225) 700036 in evenings.

● C64/128 £175. C1571 fast disk drive £180. C2N datasette £25. User manuals, TV monitor 14" colour £100. Sold separately or together for £350 (not including monitor). Phone Hereford (0432) 263978.

● Commodore 64C, cassette recorder, sound sampler, 2 joysticks, Mouse 'n' Cheese, reset switch and 140 original games. Altogether worth £1000. Sell for £350 ono. Phone Deal 365188. Also 1541 disk drive £100 ono.

● Spectrum 128K data recorder, Ram turbo interface, Quickshot joystick including games like Starglider and Matchday. Excellent condition. Offers around £60. Phone Maidenhead 22089.

● Epson P40 printer, Ramprint printer interface for sale, paper and charger included boxed and both new. Worth £90. Will sell for £70. Kimwen Lok, 113 Tanners Hill, Deptford, London SE8 4QD.

● Casio CZ-230S keyboard as described in ACE issue 4. 100 P.D. presets, 20 P.C.M rhythms etc. Regulated power supply, headphones, midi leads and St software supplied (if required) £200 ono. Ring Swanley 0322 64273.

● Back issues of Amstrad Action at 50p each. Issues 10, 12 to 26. Send large SAE plus payment to G Greenway, 6 Balcaskre Close, Edgbaston, B15 3UE. Good condition.

● Atari ST Public Domain, games, art, utilities and demos, only £5 per disk P&P inc. Also happy ST enchancement, large SAE for info to Mr Stock, 15 Woodbrooke Road, Birmingham, B30 1UE.

● Reset buttons, compact and reliable, for only £4.50. Send cheques P.O's to A Mooney, 25c Northdale Road, higher Blackley, Manchester. M9 3WG. Order yours right now!

● I have over 100 Spectrum pokes for sale (cheap!) Send a SAE for a list. Scott Campbell, 85 Forbeshill, Forres, Morayshire, Scotland, IV36 0JL. Phone (0309) 72457 for examples of games now!

● Spectrum 128K, Kempston interface with 2 joysticks, cassette recorder and 5 octave music keyboard. £70 worth of Spectrum magazines and books! £400 worth of software! Will accept £300 for the lot! (ono) Tel: Thirsk (0845) 577320. Amazing!

● Music routine for CBM 64. Over 35 functions available in source code for Genius and Lightning assemblers. £10 or £1 for audio demo. Mark Tait, 2 Ewing Court, Broomridge, Stirling. FK7 0QP.

● Atari 1029 printer + 2 spare ribbons, manuals, leads & Atari writer + Atari 1050 disk drive + manuals, 5 blank disc, software including Gauntlet, Mini Office II, Tomahawk, etc. £90 each. Tel 0276 25769.

● Quickshot II joystick for sale. Only £5 . Ring 051-428 8844 now!

● Spectrum +2 for sale. Only ten months old. £100 ono. Also three joysticks and Kempston interface. £35 phone 01-578-1543. After 5pm. Weekdays, anytime weekend.

● Look, a bargain at twice the price. Atari 800XL, disk drive plus tons of original software including Gauntlet, Alternate Reality, Rescue on Fractalus, Koronis Rift. £160. Phone Russell on (0604) 890663.

● Spectrum 48K, tape recorder, 125+ joystick, dual port interface, printer, over 45 games, sell for £150.00 or less. Phone Paul on 01-595 3388. Write to 37 Stanley Ave, Dagenham, Essex. RM8 1JH.

● Amstrad 6128 mono disk system, books, magazines, original games worth over £200 tape recorder included. Machine code basic

THE ACE HELPLINE

Here's a great way of receiving free advice from public-spirited readers. This month it's restricted to adventure games, but we'll be expanding it to include other kinds of help.

If you make use of this service. please respect the Helpline code:

• If writing for help, enclose a stamped, self-addressed envelope.

• Do not make phone calls at anti-social hours.

● Bureaucracy, Knight Orc, Guild of Thieves, Pawn, Leather Goddesses of Phobos, Wishbringer, Zork 1, Red Moon, Return to Eden, Snowball, Worm in Paradise, Price of Magic, Lord of the Rings, Kings Quest II, Hawk, Spiderman, Dungeon Adventures, Colossal Adventures, Adventure Quest, Macbeth I, II, & IV, Fourth Protocol I, II, & III.

RGB Marshall, 3 Mereside Avenue, Congleton, Cheshire, CW12 4JZ.

● I have completed the following: The Pawn, The Bard's Tale, Ultima IV, Phantasie I, Dracula, Never Ending Story, Zork III, Wishbringer, Enchanter, Borrowed Time, Kobyashi Naru, Heavy on the Magick, Legacy, The Prince of Magic, Claws of Despair, Wizards & The Princess.

Derek Wong, 42 Ingram Road, Thornton Heath, Surrey. CR4 8EB.

● Wishbringer, Labyrinth, The Hobbit, The Hulk, Spiderman, Seabase Delta, Kobyashi Naru.

Ann Gray, 9 Alness Close, Birchwood, Lincoln, Lincs. LN6 0YX.

● Enchanter, Sorcerer, Spellbreaker, Leather Goddesses of Phobos, Infidel, Zork I, II, III, The Pawn, Kingdom of Hamil, Aftershock, Adventure Quest, Angelique a Grief Encounter, Arnold Blackwood Trilogy, The Big Sleaze, Black Fountain, Bugsy, Castle Blackstar, Castle of Skull Lord, Cursed be the City, Dracula, Dungeons Amethysts Alchemists n 'Everythin', Escape from Khosima, Espionage Island, Fantasia Diamond, Forest at World End, Gremlins, Haunted House, Hermitage, Heros of Karn, The Hollow Text and Graphic, Hunchback, Imagination, Jewels of Babylon, Kobyashi Naru, Lifeterm, Lords of Time, Mansion, Message from Andromeda, Mindshadow, Monsters of Murdac, Mordens Quest, Mountains of Ket, Neverending Story, Nova, Nythyhel, Planet of Death, Rebel Planet, Rigels Revenge, Robin of Sherwood, Robocide, Seabase Delta, Sharpes Deeds, Ship of Doom, Sould of Darkon, Spytrek, Subsunk, Theseusm, Top Secret, Very Big Cave Adventure, Warlord, Winter Wonderland, Wizard of Akryz.

Graham Wheeler, 2 Burford Close, Southdown, Bath, Avon, BA2 1JF.
Tel: 0225 26919.

firmware manuals worth over £420 - Sell £260 P&P included. Phone 0977 792361 extension 222.

● Atari 130XE, Omnimon, Ultimon, 1050 Happy 810 Happy 392 discs software, printer interface, £275. BBC Model B, 32KSWR, dual 40TRK, D/S drives 100 discs, software, books, leads etc. £325. Tel: Malvern 64607.

● Computer Word Quest. Educational Amstrad CPC 464 word search game with added addictive timed gameplay. Learn spellings the easy way. Only £2. Robert Phelps, 128 Kings Court Lane, Stroud, Glos. GL5 3PX.

● Atari SF3S4 Half Meg Disk Drive inc power supply, only £70 Tel: 0993 845 425.

● 128+2 computer with ram music machine, machine language book and assembler, Mach I+ joystick, dust cover and games. all worth over £300. Sell for £175 ono. Contact Alan, 9 Cockerham Way, Gillmoss, Liverpool. Tel: (051) 548 3148.

● Commodore 64K computer, two datasettes, printer, modem, joystick, paddles, books, leads, dust covers, plus over 70 software titles, including educational software, G.A.C., Basic Lightening etc. Sell for £300 ono. Tel. 01-646-0746.

Public health warning

Needless to say, we cannot ourselves vouch for the credentials of any particular entry in this section. If you respond, it's at your own risk.

● BBC B including data recorder, joystick interface, all leads, 800K dual disc drive and over £200 worth of latest software. All in excellent condition £420 ono. Tel: (0423) 864573 after 4.00pm.

● Sinclair ZX printer and manual and paper only £15. Contact D Wilson, 115 Newtown Road, Newbury, Berkshire, or phone (0635) 31164.

● Great Amstrad Package: Amstrad CPC 6128, DMP2000 printer, plus £350 worth of amazing software, including games, word processors, utilities and joystick. Tel: Russell on 01-207-5551 now! Complete immediate sale £600.00 ono.

● CBM64, C2N cassette, 5 octave keyboard, Sound Studio, Sound expander, sound sampler (disk), joystick, games, books, loads of magazines. A bargain at £250. Phone Steven 051 449 1304.

● CBM 64 and software. Shop value £350. Selling at £170. Phone Mat on 0949 39186.

● Amstrad 6182, green, Multiface 2, Sound Blaster, modulator. Many software titles on tape and disc. Will sell software and hardware separately. 5 months old. £350 for the lot. Tel Eccleston (0257) 452268.

● Star NL10C printer for CBM 64/128. NLQ or 120 cps. Rarely used and in excellent condition. £165. Ring Jim on 061 773 4199.

● Amstrad 6128 computer with colour monitor, MK5 midi keyboard, mini interface, Amdrum with extra drumkit and joystick. Phone anytime. Crawley (0293) 24048. £290.

● Spectrum Plus with two datacorders, joystick + interface. Over 100 computer magazines. Crash, Y.S. etc., plus over £700 of software including Star wars, Starglider, Elite, Gunship, Catch 23, Tai-Pan and many other. Excellent condition. Boxed. £140.00. David Garner, 32 Caxton Street, Market Harborough, Leicestershire. LE16 9ER.

● Spectrum magazine: Eprom issue four now available. 60+ pages. Hewson interview, 128 software, technical pages. Designer reading only 80p plus stamp from Eprom, 328 The Maltings, Penwortham, Preston, Lancs PR1 9FD.

● Commodore 64, C2N, over £300 of original software, manuals, joystick, 19 issues of Zzap! 64, dust covers & international soccer cartridge. Total value £550. Good condition, £150. Phone (02814) 3586.

● Commodore 64, C2N tape recorder, 45 games including Druid I & II, Delta, Gauntlet, The Last Ninja, Thing on a Spring I & II, etc. Plus over 30 mags. Buyer collects. Ring (0633) 420727 for details. £140. All boxed.

● Still boxed and in very good condition 128K Spectrum, 2 joysticks, Kempston interface, cassette recorder and 5 octave, 8 voice music keyboard, (all manuals and leads, interfaces included). £70 worth of Spectrum books and magazines. £400 worth of software including 'Starglider' and 'G.A.C.'. Will accept £300 for the lot (ono). Tel Thirsk (0845) 577320. Amazing!

● ZX81 computer with learning lab including 10 tapes - open to offers. Wanted: Multiface II/Immager etc for Amstrad CPC computer. Write with details. Penpals wanted: I am 15 years old and own an Amstrad 6128 and would like penpals aged 13-16. Amelia Wildey, 41 Enmore Gardens, Eash Sheen, London. SW14 8RF.

● Commodore 64 with games mags, joystick, very good condition. Would like to swap for Atari ST. Phone Workington 832348 after 4pm.

▪ WANTED

● Pokes wanted. W ill pay. Also solution to Hampstead and Never Ending Story. Send information to my home address: Burnside Cottage, Manse Road, Abernethy, Perthshire. Scotland.

● Software wanted for Lynx computer as soon as possible. Contact Wayne at 19 Braithwart Close, Cloverhill, Norwich, Norfolk, or ring me on (0603) 744947 after 20th Jan after 5pm.

● Expert MK2 or similar cartridge wanted, must be cheap. Write Joe, 42 Summerhill, Hedworth, Jarrow, NE32 4RW.

▪ PENPALS

● An Amiga owner wants to meet other. Phone Alastair on (0532) 788042 or write to Alastair Dickinson, 2 Hollin View, Weetwood, Leeds. LS16 5NQ.

● 14 year old male ST owner seeks female pen pal with an interest in arcade and role-playing games. I am also interested in squash, tennis and going out. Gavin Lim, 37 Norlands Crescent, Chislehurst, Kent. BR7 5RN.

● ST penpals wanted all over the world. New owner with interest in music and graphical demos and games. Write to Guy, at 90 Upton Way, Broadstone, Dorset, England. BH18 9NA.

● Atari ST penpals wanted. Write to Nathan Wheelhouse (14), 40 Kirkby Drive, Gleadless, Sheffield, S12 2LX.

● New 520STFM user seeks contacts worldwide to exchange info and possible create user group. Interested? Then why not drop me a line. Norm, 5 Campion House, Mayville Estate, Matthias Road, London, N16 8LN. So c'mon write now!!

● Hi, I'm 18 and own an Atari ST. I want a penpal with a sense of humour. Only interesting letters answered. Send to Frav, 14 Waterloo Court, Queens Road, Skegness, Lincs. PE25 2ES.

● Atari ST contacts wanted male/female. Guaranteed reply. Must be trustworthy. Only write if you are 14+. Neil Carr, 65 Wivelsfield Road, Balby, Doncaster, South Yorks, DN4 0UY.

● Penpal computer matching. 50p + SAE. Newsagent software being written, SAE. Details listings printed for Amstrad CPC, Tasword text or listings (SAE). D Ward, 3 Pineways, Appleton, Warrington, Cheshire. WA4 5EJ. (0925) 64805 (evenings).

▪ USER GROUPS

● User groups for those lucky people who have the brilliant Amiga. If interested write to The Amazing Amiga Group, Lock Monzievaird, Grieff, Tayside, Scotland. PH7 4JR.

● Any Amstrad owners in the London area? I wish to start a user group of games, tips, hints amd offers. Call me on 01-521-1277. Keep Amstrads Alive!

● For one of the best MSX magazines around try the Scottish office of MSX Link. We publish a monthly magazine (on sale now at £1.00 plus 20p P&P) which is filled with useful information, letters, hints and tips etc. Please contact: MSX Link, (ACE), North Lodge, Cairnhill Road, Airdrie, Lanarkshire, Scotland. ML6 9RJ. Tel. (0236) 64045.

HOW TO PLACE YOUR **FREE** ENTRY

All you have to do to place a free entry in these pages is send off the form below. but please note:

- The maximum is 30 words except for Helpline. (Helpline entries can extended to 100 words max – use another sheet of paper if necessary.)
- The service is NOT open to trade advertisers.
- We do not guarantee to print your entry in any particular issue.
- Entries which could be interpreted as encouraging software piracy will not be accepted.

ENTRY FORM

Post to: **ACE Readers Page, Future Publishing Ltd, 4 Queen St, Bath, Avon BA1 1EJ**

Please place this entry in the next available issue of ACE.

Name ____________________

Address ____________________

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Category of entry:

☐ Helpline ☐ For Sale ☐ Wanted ☐ Pen Pals ☐ User Groups ☐ Other

Write your advertisement here, one word per box. Include your name, address and phone number if you want them printed.

THE BLITTER END...

LUCKY BLITTERS

Our biggest comp yet, the great ACE/SILICA SHOP Amiga give-away from Issue 3, is finally over. Picking out those five lucky winners took some doing – there were over 12,000 entries! – but pick them we did. The four runners-up are: A.WALKER of Worcester, DARREN HELLYAR of Southampton, S.ANDREWS of Grimsby and D.BARKER of Kirkby-in-Ashfield, Notts. Each of these oh-so-fortunate people wins an Amiga 500, a TV modulator and five pieces of software. But the really incredibly fortunate guy is GERRY MARK BROOKS of Bolton, who wins an A500, *fifty* pieces of software and a 1081 colour monitor.

● Contact...

The ACE crew's thanks go to the Bristol & Wessex Aeroplane Club for their invaluable help on this issue's flight simulator buyers' guide: Byron and Kevin, take a bow! If you fancy learning to fly and you're within striking distance of Bristol Airport, why not give the club a ring on Lulsgate (027587) 2514?

● Oops...

No *Blitter End* would be quite complete without a decent king-size OOPS, and the minor-league howlers in the freebie diary's phone list hardly count. Have no fear: issue 4's Tricks'n'Tactics steps into the breach with a dodgy data statement in Marc Donnelly's wonderful *Renegade* poke. The problem was with that number 2356 in line 130 – it should have been 235 instead – and was very definitely our OOPS rather than Marc's.

● Eat your words...

What kind of month has it been this month? An eating sort of month, that's what. After *Nord and Bert*'s wonderful helping of crow – with humble pie to follow – the ACE offices were flooded with pics of people chowing down. Photos of those wacky Piranha folk eating a rather fishy cake at their birthday party, photos of those even wackier Cascade people in fatigues preparing to eat leaden death, and wackiest of all, we think is this one of Evesham Micros boss Richard Austin tucking into his boater. Now we at the ACE offices are rather partial to the odd hat now and then – who isn't? – but having an A500 for afters does seem a little strange...

DANGER
RANGE BOUNDARY-KEEP OUT
WH RED FLAGS ARE FLYING
AS G MAY BE IN PROGRESS

● Retract your words!

No, if you *really* want to know what sort of a month it's been, it's been a legal sort of one. What with the rather surprising contents of the Video Recordings Act, the ticklish subject of interlocutory injunctions raised by *Telecomsoft v. Hewson* and the fascinating prospect of Mastertronic suing Codemasters for the rather exotic tort of injurious falsehood, we've hardly been able to get through the door for the crowd of m'learned friends in the ACE offices.

Worse still, the wigged wonders have turned their attentions on ACE itself now: those highly artistic Quantel people have written us a stiffish letter over our use of the word PAINTBOX to mean a bit-mapped art package. PAINTBOX, it appears, is a registered trademark of Quantel (no 1 222 657 to be precise) and they'd like us to stop using it in a generic sense, but pronto.

Now with respect we think the horse has probably already bolted here: after all, 'paintbox' may not quite be in the same league as 'hoover' or 'biro' but a lot of people do use it as a general term. Still, Quantel feel pretty strongly about this and we don't, so we're happy to oblige. Unfortunately, the letter arrived too late to change the references to paintboxes in this issue's art pages. There's another problem, though; what are we going to call the things now, for goodness sake? Answers on a postcard please...

PHONE NUMBERS

Two cock-ups in the ACE 1988 Diary – we got the phone numbers of Palace Software and Firebird wrong. The correcf number for **PALACE** is **01-278 0751**. Don't ring the Firebird number in the Diary – that will get you the European Sales Office. For **FIREBIRD**, ring **01-631 5168.**

Next month...

Yet another sparkling issue of ACE will be hitting the shelves, on February 4th. As well as all the juicy regulars we'll have

- **Are GAMES of the FUTURE being held back by the COIN-OPS?**
- **BRAIN GAMES – the complete low-down on the the games that make you think; and what the experts think of them.**
- **GRAPHICS – part 2 of our DIY series**
- **Software houses – who's making the BIG BUCKS?**

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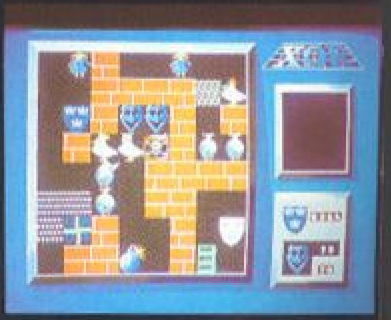

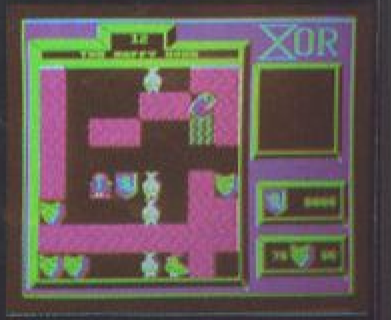

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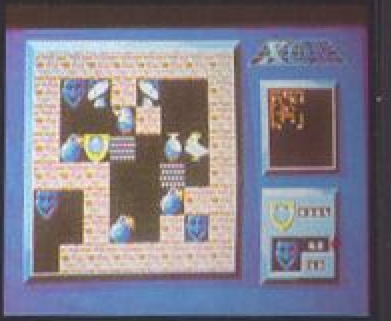

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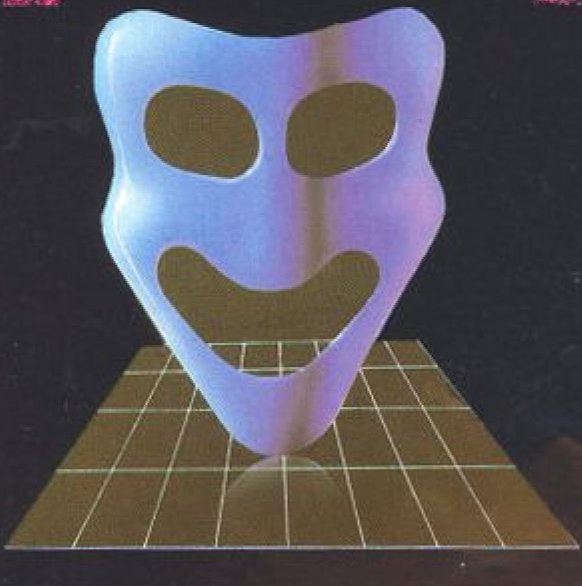

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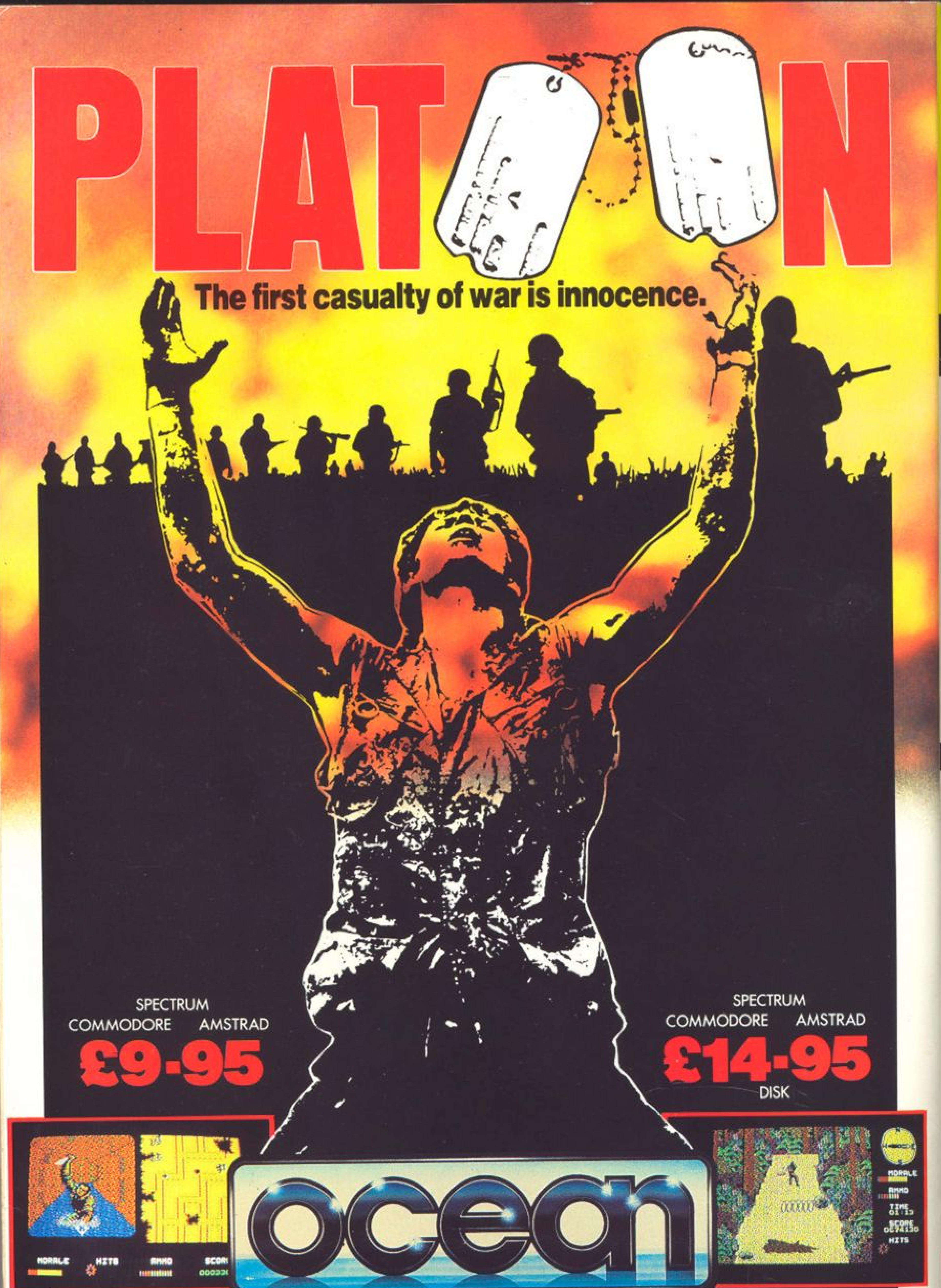
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